

Student: _____

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Assignment: 05-13-19

Date: _____

Course: Math 0410 Spring 2018

05-15-19

1. Evaluate
- $2x - y$
- for the given replacement values.

$x = 2 \text{ and } y = -8$

$2x - y = \underline{\hspace{2cm}}$

Answer: 12

$$\begin{aligned} 2x - y &= \\ 2(2) - (-8) &= \\ 4 + 8 &= \\ 12 &= \end{aligned}$$

2. Simplify.

$8 + 4 \cdot 9 - 11$

$8 + 4 \cdot 9 - 11 = \underline{\hspace{2cm}}$

Answer: 33

$$\begin{aligned} 8 + 4 \cdot 9 - 11 &= \\ 8 + 36 - 11 &= \\ 44 - 11 &= \\ 33 &= \end{aligned}$$

3. Simplify.

$8(-12) + [2(-8) - 3(-5)]$

The answer is $\underline{\hspace{2cm}}$.

Answer: 96

$$\begin{aligned} 8(-12) \div [2(-8) - 3(-5)] &= \\ 8(-12) \div [-16 + 15] &= \\ 8(-12) \div [-1] &= \\ -96 \div [-1] &= 96 \end{aligned}$$

4. Evaluate the following expression for
- $x = -3$
- and
- $y = 4$
- .

$x^2 - y$

$x^2 - y = \underline{\hspace{2cm}}$

Answer: 5

$$\begin{aligned} x^2 - y &= \\ (-3)^2 - (4) &= \\ (-3)(-3) - (4) &= \\ 9 - 4 &= \\ 5 &= \end{aligned}$$

5. Solve. Check your solution.

$d - 7 = -5$

The solution is $d = \underline{\hspace{2cm}}$.

Answer: 2

$$\begin{aligned} d - 7 &= -5 \\ d - 7 + 7 &= -5 + 7 \\ d &= 2 \end{aligned}$$

6. Solve.

$\frac{n}{8} = -4$

The solution is $n = \underline{\hspace{2cm}}$.

Answer: -32

$$\begin{aligned} \frac{n}{8} &= -4 \\ (8) \frac{n}{8} &= 8(-4) \\ n &= -32 \end{aligned}$$

7. Simplify the expression by combining like terms.

$3x - 10x$

$3x - 10x = \boxed{}$

Answer: $-7x$

$3x - 10x =$

$-7x =$

8. Multiply.

$-6(3s + 2)$

$-6(3s + 2) = \boxed{}$

Answer: $-18s - 12$

$-6(3s + 2) =$

$-18s - 12 =$

9. Simplify the expression.

$4y - 2(y - 3) + 4$

$4y - 2(y - 3) + 4 = \boxed{}$

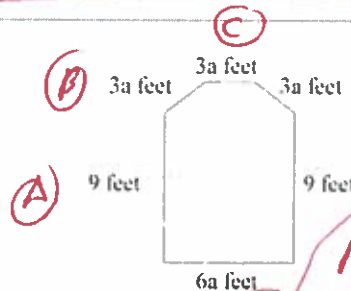
Answer: $2y + 10$

$4y - 2(y - 3) + 4 =$

$4y - 2y + 6 + 4 =$

$2y + 10 =$

10. Find the perimeter of the figure.



$P = A + B + C + D + E + F$

$P = 9 + 3a + 3a + 3a + 9 + 6a$

$P = 15a + 18$

The perimeter is $\boxed{}$ feet. (Simplify your answer.)Answer: $15a + 18$

11. Find the perimeter of the figure.

Each side:
 $-8x + 13$
inches

$N = -8x + 13$

$P = 5N$

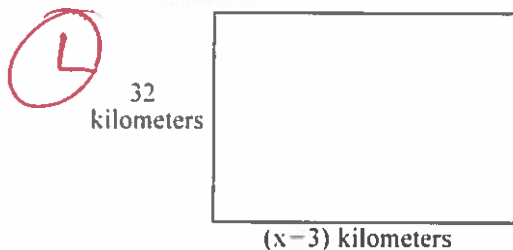
$P = 5(-8x + 13)$

$P = -40x + 65$

The perimeter is $\boxed{}$ inches. (Simplify your answer.)Answer: $-40x + 65$

12. Find the area of the rectangle.

The area is sq km.
(Simplify your answer.)



Answer: $32x - 96$

$$A = LW$$

$$A = (32)(x-3)$$

$$A = 32x - 96$$

13. A decorator wishes to put a wallpaper border around a rectangular room that measures 22 feet by 30 feet. Find the room's perimeter. Use $P = 2L + 2W$.

The perimeter of the room is feet.

Answer: 104

$$P = 2L + 2W$$

$$P = 2(30) + 2(22)$$

$$P = 60 + 44$$

$$P = 104$$

14. Solve and check the solution.

$$4(2x - 4) = 9x$$

$x =$

Answer: -16

$$4(2x - 4) = 9x$$

$$8x - 16 = 9x$$

$$8x - 16 + 16 = 9x + 16$$

$$8x = 9x + 16$$

$$8x - 9x = 9x + 16 - 9x$$

$$-1x = 16$$

$$\frac{-1x}{-1} = \frac{16}{-1}$$

$$x = -16$$

15. Solve the equation.

$$-3(x + 9) - 43 = 5 - 51$$

The answer is $x =$

Answer: -8

$$-3(x + 9) - 43 = 5 - 51$$

$$-3x - 27 - 43 = -46$$

$$-3x - 70 = -46$$

$$-3x - 70 + 70 = -46 + 70$$

$$-3x = 24$$

$$\frac{-3x}{-3} = \frac{24}{-3}$$

$$x = -8$$

16. Solve the following equation.

$$\frac{x}{-3} = 2^2 - |-3| - (-6)$$

The solution is
(Simplify your answer.)

Answer: -21

$$\frac{x}{-3} = 2^2 - |-3| - (-6)$$

$$\frac{x}{-3} = 2 \cdot 2 - (3) + 6$$

$$\frac{x}{-3} = 4 - 3 + 6$$

$$\frac{x}{-3} = 1 + 6$$

$$\frac{x}{-3} = 7$$

$$-3\left(\frac{x}{-3}\right) = -3(7)$$

$$x = -21$$

17. Solve the equation.

$$8x - 1 = 9x + 8$$

x =

Answer: -9

$$8x - 1 = 9x + 8$$

$$8x - x + 1 = 9x + 8 + 1$$

$$8x = 9x + 9$$

$$8x - 9x = 9x + 9 - 9x$$

$$-1x = 9$$

$$\frac{-1x}{-1} = \frac{9}{-1}$$

$$x = -9$$

18. Solve the equation.

$$-18x - 20 = -14x + 100$$

x =

Answer: -30

$$-18x - 20 = -14x + 100$$

$$-18x - 20 + 20 = -14x + 100 + 20$$

$$-18x = -14x + 120$$

$$-18x + 14x = -14x + 120 + 14x$$

$$-4x = 120$$

$$\frac{-4x}{-4} = \frac{120}{-4}$$

$$x = -30$$

19. Solve the equation.

$$4(y - 3) = 2y - 12$$

y =

Answer: 0

$$4(y - 3) = 2y - 12$$

$$4y - 12 = 2y - 12$$

$$4y - 12 + 12 = 2y - 12 + 12$$

$$4y = 2y$$

$$4y - 2y = 2y - 2y$$

$$2y = 0$$

$$\frac{2y}{2} = \frac{0}{2}$$

$$y = 0$$

20. Solve the equation.

$$3t - 7 = 4(t + 6)$$

t =

Answer: -31

$$3t - 7 = 4(t + 6)$$

$$3t - 7 = 4t + 24$$

$$3t - 7 + 7 = 4t + 24 + 7$$

$$3t = 4t + 31$$

$$3t - 4t = 4t + 31 - 4t$$

$$-1t = 31$$

$$\frac{-1t}{-1} = \frac{31}{-1}$$

$$t = -31$$

21. Solve the equation.

$$2(5c - 1) - 3 = 8c + 9$$

c =

Answer: 7

$$2(5c - 1) - 3 = 8c + 9$$

$$10c - 2 - 3 = 8c + 9$$

$$10c - 5 = 8c + 9$$

$$10c - 5 + 5 = 8c + 9 + 5$$

$$10c = 8c + 14$$

$$10c - 8c = 8c + 14 - 8c$$

$$2c = 14$$

$$\frac{2c}{2} = \frac{14}{2}$$

$$c = 7$$

22. Solve the equation.

$$5n + 55 = 60$$

n =

Answer: 1

$$5n + 55 = 60$$

$$5n + 55 - 55 = 60 - 55$$

$$5n = 5$$

$$\frac{5n}{5} = \frac{5}{5}$$

$$n = 1$$

23. During the women's basketball championship game, team A scored 6 more points than team B. Together, both teams scored a total of 160 points. How many points did the Champion team A score during this game?

points

Answer: 83

Handwritten work for Question 23:

$$(x+6) + (x) = 160$$

$$2x + 6 = 160$$

$$2x = 154$$

$$\frac{2x}{2} = \frac{154}{2}$$

$$x = 77$$

Team A score: $x + 6 = 77 + 6 = 83$

Team B score: $x = 77$

Primes: 2, 3, 5, 7, 11, 13, ...

24. Multiply. Write the product in simplest form.

$$-\frac{3}{2} \cdot \frac{5}{6}$$

$$-\frac{3}{2} \cdot \frac{5}{6} = \text{}$$

Answer: $-\frac{5}{4}$

$$-\frac{3}{2} \cdot \frac{5}{6} =$$

$$-\frac{1(3)}{2} \cdot \frac{5}{(2)(3)} =$$

$$-\frac{1 \cdot 5}{2 \cdot 2} =$$

$$-\frac{5}{4}$$

$$\begin{array}{r} 2 \overline{) 6} \\ 3 \overline{) 3} \\ 1 \end{array}$$

25. Multiply.

$$\frac{7}{6} \cdot \frac{1}{2} \cdot \frac{3}{14}$$

$$\frac{7}{6} \cdot \frac{1}{2} \cdot \frac{3}{14} = \text{} \text{ (Type a simplified fraction.)}$$

Answer: $\frac{1}{8}$

$$\frac{7}{6} \cdot \frac{1}{2} \cdot \frac{3}{14} =$$

$$\frac{1}{2 \cdot 3} \cdot \frac{1}{2} \cdot \frac{3}{2 \cdot 7} =$$

$$\frac{1}{2 \cdot 2 \cdot 2} =$$

$$\frac{1}{8} =$$

Primes: 2, 3, 5, 7, 11, 13, ...

$$\begin{array}{r} 2 \overline{) 6} \\ 3 \overline{) 3} \\ 1 \end{array} \quad \begin{array}{r} 2 \overline{) 14} \\ 7 \overline{) 7} \\ 1 \end{array}$$

26. Evaluate the following expression.

$$\left(-\frac{3}{7}\right)^2$$

$$\left(-\frac{3}{7}\right)^2 = \text{} \text{ (Simplify your answer. Type an integer or a fraction.)}$$

Answer: $\frac{9}{49}$

$$\left(-\frac{3}{7}\right)^2 =$$

$$\left(-\frac{3}{7}\right) \left(-\frac{3}{7}\right) =$$

$$\frac{9}{49} =$$

27. Divide.

$$\frac{7}{18} \div \frac{31}{36}$$

Select the correct choice below and fill in any answer boxes in your choice.

☐ A. $\frac{7}{18} \div \frac{31}{36} =$ _____ (Type an integer or a simplified fraction.)

☐ B. The answer is undefined.

Answer: A. $\frac{7}{18} \div \frac{31}{36} =$ (Type an integer or a simplified fraction.)

Primes 2, 3, 5, 7, 11...

$$\frac{7}{18} \div \frac{31}{36} =$$

$$\frac{7}{18} \cdot \frac{36}{31} =$$

$$\frac{7}{\cancel{2} \cdot \cancel{3} \cdot \cancel{3}} \cdot \frac{\cancel{2} \cdot \cancel{2} \cdot \cancel{3} \cdot \cancel{3}}{31} = 1$$

$$\frac{7 \cdot 2}{31} =$$

$$\frac{14}{31} =$$

28. Perform the indicated operation.

$$\frac{25x^2}{21y} \div \frac{15x}{49y}$$

$$\frac{25x^2}{21y} \div \frac{15x}{49y} =$$

(Simplify your answer. Use integers or fractions for any numbers in the expression.)

Answer: $\frac{35x}{9}$

$$\frac{25x^2}{21y} \div \frac{15x}{49y} =$$

$$\frac{25x^2}{21y} \cdot \frac{49y}{15x} =$$

$$\frac{5 \cdot 5 \cdot x \cdot x}{3 \cdot 7 \cdot y} \cdot \frac{7 \cdot 7 \cdot y}{3 \cdot 5 \cdot x} =$$

$$\frac{5 \cdot x \cdot 7}{3 \cdot 3} =$$

$$\frac{35x}{9} =$$

29. Find $\frac{3}{4}$ of 28. Write the answer in simplest form.

 $\frac{3}{4}$ of 28 is . (Simplify your answer.)

Answer: 21

$$\frac{3}{4} (28) =$$

$$\frac{3}{4} \cdot \frac{28}{1} =$$

$$\frac{3}{\cancel{2} \cdot \cancel{2}} \cdot \frac{\cancel{2} \cdot \cancel{2} \cdot 7}{1} = \frac{3 \cdot 7}{1} = 21$$

Primes 2, 3, 5, 7, 11, 13...

$$\begin{array}{r} 2 \overline{)28} \\ 2 \overline{)4} \\ \hline 2 \overline{)14} \\ 2 \overline{)14} \\ \hline 7 \overline{)7} \\ 7 \overline{)7} \\ \hline 1 \end{array}$$

30. Add and simplify.

$$\frac{4}{9} + \frac{2}{9}$$

 $\frac{4}{9} + \frac{2}{9} =$ (Type an integer or a simplified fraction.)

Answer: $\frac{2}{3}$

$$\frac{4}{9} + \frac{2}{9} =$$

$$\frac{4+2}{9} =$$

$$\frac{6}{9} =$$

$$\frac{2 \overline{)6}}{3 \overline{)3}} =$$

$$\frac{2}{3} =$$

31. Add and simplify.

$$\frac{1}{2} + \frac{1}{4}$$

$$\frac{1}{2} + \frac{1}{4} = \text{_____} \quad (\text{Type an integer or a fraction.})$$

Answer: $\frac{3}{4}$

$$\frac{1}{2} + \frac{1}{4} =$$

$$\frac{1}{2} \left(\frac{2}{2} \right) + \frac{1}{4} =$$

$$\frac{2}{4} + \frac{1}{4} =$$

$$\frac{2+1}{4} =$$

$$\frac{3}{4} =$$

$$\text{LCD} = 4$$

32. Subtract.

$$\frac{1}{4} - \frac{5}{18}$$

$$\frac{1}{4} - \frac{5}{18} = \text{_____} \quad (\text{Type an integer or a fraction.})$$

Answer: $-\frac{1}{36}$

$$\frac{1}{4} - \frac{5}{18} =$$

$$\frac{1}{4} \left(\frac{9}{9} \right) - \frac{5}{18} \left(\frac{2}{2} \right) =$$

$$\frac{9}{36} - \frac{10}{36} =$$

$$\frac{9-10}{36} = \frac{-1}{36}$$

Prime: 2, 3, 5, 7, 11, 13...

$$2 \overline{) 4} \quad 2 \overline{) 18}$$

$$2 \overline{) 2} \quad 3 \overline{) 9}$$

$$4 = 2 \cdot 2 \quad 1$$

$$18 = 2 \cdot 3 \cdot 3$$

$$\text{LCD} = 2 \cdot 2 \cdot 3 \cdot 3 = 36$$

33. Simplify the complex fraction.

$$\frac{\frac{2}{9}}{\frac{2}{7}}$$

$$\frac{\frac{2}{9}}{\frac{2}{7}} = \text{_____} \quad (\text{Type an integer or a simplified fraction.})$$

Answer: $\frac{7}{9}$

$$\frac{\frac{2}{9}}{\frac{2}{7}} =$$

$$\frac{2}{9} \cdot \frac{7}{2} =$$

$$\frac{7}{9} =$$

34.

Solve the equation and check the solution.

$$x = \text{_____}$$

$$-35 = \frac{5}{7}x$$

Answer: -49

$$-35 = \frac{5}{7}x$$

$$\frac{7}{5} \left(-\frac{35}{1} \right) = \frac{7}{5} \left(\frac{5x}{7} \right)$$

$$\frac{7}{5} \left(\frac{-7 \cdot 5}{1} \right) = x$$

$$7 \cdot (-7) = x$$

$$-49 = x$$

35. Solve the equation.

$$\frac{x}{5} = \frac{x}{6} - 4$$

x = (Type an integer or a fraction. Simplify your answer.)

Answer: -120

$$\frac{x}{5}(30) = \frac{x}{6}(30) - 4(30)$$

$$x(6) = x(5) - 120$$

$$6x = 5x - 120$$

$$6x - 5x = 5x - 120 - 5x$$

$$x = -120$$

$$LCD = 30$$

36. Solve the equation.

$$\frac{8}{9} - \frac{z}{8} = \frac{1}{72}$$

z = (Type an integer or a fraction. Simplify your answer.)

Answer: 7

$$\frac{8}{9}(72) - \frac{z}{8}(72) = \frac{1}{72}(72)$$

$$8(8) - z(9) = 1(1)$$

$$64 - 9z = 1$$

$$64 - 9z - 64 = 1 - 64$$

$$LCD = 72$$

$$-9z = -63$$

$$\frac{-9z}{-9} = \frac{-63}{-9}$$

$$z = 7$$

37. Solve.

$$\frac{x}{2} + 5 = \frac{1}{2}$$

x = (Type an integer or a fraction. Simplify your answer.)

Answer: -9

$$\frac{x}{2}(2) + 5(2) = \frac{1}{2}(2)$$

$$x(1) + 10 = 1(1)$$

$$x + 10 = 1$$

$$x + 10 - 10 = 1 - 10$$

$$x = -9$$

$$LCD = 2$$

38. Solve the equation.

$$\frac{a}{6} + 5 = \frac{a}{5} + 8$$

a = (Type an integer or fraction. Simplify your answer.)

Answer: -90

$$\frac{a}{6}(30) + 5(30) = \frac{a}{5}(30) + 8(30)$$

$$a(5) + 150 = a(6) + 240$$

$$5a + 150 = 6a + 240$$

$$5a + 150 - 150 = 6a + 240 - 150$$

$$5a = 6a + 90$$

$$LCD = 30$$

$$5a - 6a = 6a + 90 - 6a$$

$$-1a = 90$$

$$\frac{-1a}{-1} = \frac{90}{-1}$$

$$a = -90$$

39. Multiply.

$$-7.022 \times 1000$$

-7.022 × 1000 = (Type an integer or a decimal.)

Answer: -7022

$$\begin{array}{r} 7.022 \\ \times 1000 \\ \hline 7022.000 \end{array}$$

$$-7022.00$$

40. Divide.

$$\begin{array}{r} 93.949 \\ 100 \end{array}$$

$$\frac{93.949}{100} = \boxed{}$$

Answer: 0.93949

$$\begin{array}{r} 0.93949 \\ 100 \overline{) 93.949} \\ \underline{90} \\ 394 \\ \underline{300} \\ 949 \\ \underline{900} \\ 490 \\ \underline{400} \\ 900 \\ \underline{900} \\ 0 \end{array}$$

41. Solve.

$$3.3x - 69 = 1.7x + 3$$

$$x = \boxed{} \text{ (Type an integer or a decimal.)}$$

Answer: 45

$$\begin{aligned} 3.3x - 69 + 69 &= 1.7x + 3 + 69 \\ 3.3x &= 1.7x + 72 \\ 3.3x - 1.7x &= 1.7x + 72 - 1.7x \\ 1.6x &= 72 \\ \frac{1.6x}{1.6} &= \frac{72}{1.6} \\ x &= 45 \end{aligned}$$

42. Solve the proportion.

$$\frac{3}{4} = \frac{x}{12}$$

$$x = \boxed{} \text{ (Type an integer or a simplified fraction.)}$$

Answer: 9

$$\frac{3}{4} = \frac{x}{12}$$

$$3(12) = 4(x) \text{ cross mult}$$

$$36 = 4x$$

$$\frac{36}{4} = \frac{4x}{4}$$

$$9 = x$$

43. A 10-oz iced tea at a certain restaurant has 90 calories. How many calories are there in a 17-oz iced tea?

The 17-oz iced tea has $\boxed{}$ calories.

Answer: 153

$$\begin{aligned} \frac{10}{90} &= \frac{17}{x} \\ 10(x) &= 90(17) \\ 10x &= 1530 \\ \frac{10x}{10} &= \frac{1530}{10} \\ x &= 153 \end{aligned}$$

44. Write the fraction as a percent.

$$\frac{4}{25}$$

$$\frac{4}{25} = \boxed{}\% \text{ (Simplify your answer.)}$$

Answer: 16

$$\frac{4}{25}$$

$$\begin{array}{r} .16 \\ 25 \overline{) 4.00} \\ \underline{25} \\ 150 \\ \underline{150} \\ 0 \text{ rem} \end{array}$$

$$\begin{aligned} .16 &= \\ \text{or } 16\% \end{aligned}$$

45. A stereo normally priced at \$749 is on sale for 45% off. Find the discount and the sale price.

The discount is \$

The sale price is \$

Answers 337.05

411.95

$$A = P - PD$$

$$A = 749 - 749(.45)$$

$$A = 749 - 337.05 \text{ discount}$$

$$A = 411.95 \text{ Sale price}$$

46. A company borrows \$58,000 for 2 years at a simple interest rate of 5.5%. Find the interest paid on the loan and the total amount paid.

The interest paid on the loan is \$

The total amount paid is \$

Answers 6,380

64,380

$$A = P + PRT$$

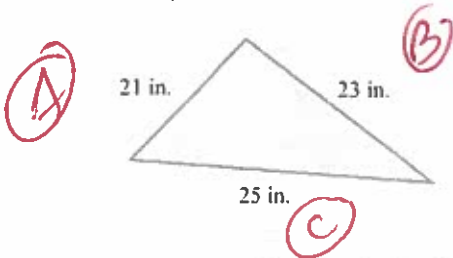
$$A = 58000 + 58000(.055)(2)$$

$$A = 58000 + 6380$$

$$A = 64380 \text{ interest}$$

$$A = 64380 \text{ total amount paid}$$

47. Find the perimeter of the following figure.



The perimeter is (1)

(1) ☐ sq. in.

☐ in.

Answers 69

(1) in.

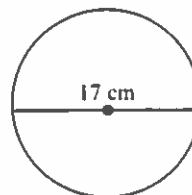
$$P = A + B + C$$

$$P = 21 + 23 + 25$$

$$P = 69$$

$$\begin{array}{r} 21 \\ 23 \\ + 25 \\ \hline 69 \end{array}$$

48. Find the circumference of the circle. Give the exact circumference and then an approximation. Use $\pi \approx 3.14$.



The exact circumference of the circle is (1)
(Simplify your answer. Type an exact answer in terms of π .)

The approximate circumference of the circle is (2)
(Type an integer or a decimal rounded to the nearest hundredth.)

- (1) ☐ centimeters. (2) ☐ feet.
☐ square centimeters. ☐ centimeters.
☐ meters.

Answers 17π

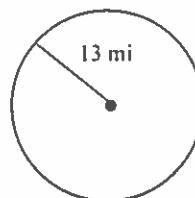
(1) centimeters.

53.38

(2) centimeters.

$$\begin{aligned} C &= \pi d \\ C &= \pi (17) \\ C &= 17\pi \\ C &= 3.14(17) \\ C &= 53.38 \end{aligned}$$

49. Find the circumference of the circle. Give the exact circumference and then an approximation. Use $\pi \approx 3.14$.



The exact circumference of the circle is (1)
(Simplify your answer. Type an exact answer in terms of π .)

The approximate circumference of the circle is (2)
(Type an integer or a decimal rounded to the nearest hundredth.)

- (1) ☐ miles. (2) ☐ miles.
☐ square miles. ☐ square miles.

Answers 26π

(1) miles.

81.64

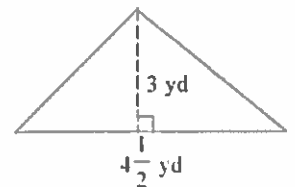
(2) miles.

$$\begin{aligned} C &= 2\pi r \\ C &= 2\pi (13) \\ C &= 26\pi \\ C &= 2\pi r \\ C &= 2(3.14)r \\ C &= 2(3.14)(13) \\ C &= 81.64 \end{aligned}$$

50. Find the area of the geometric figure.

$$H = 3$$

$$B = 4\frac{1}{2} = 4.5$$



The area is (1) . (Simplify your answer.)

- (1) ☐ yards
☐ square yards
☐ cubic yards

Answers $6\frac{3}{4}$

(1) square yards

$$A = \frac{1}{2} B H$$

$$A = \frac{1}{2} (4.5) (3)$$

$$A = \frac{1}{2} (13.5)$$

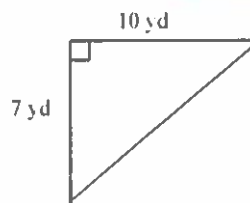
$$A = 6.75$$

$$A = 6.75$$

$$OR A = 6\frac{3}{4}$$

51. Find the area of the given geometric figure.

rotate



$$B = 10$$

$$H = 7$$

$$A = \frac{1}{2} B H$$

$$A = \frac{1}{2} (10) (7)$$

$$A = \frac{1}{2} (70)$$

$$A = \frac{70}{2}$$

$$A = 35$$

The area of the triangle is (1) . (Simplify your answer.)

- (1) ☐ yards.
☐ cubic yards.
☐ square yards.

Answers 35

(1) square yards.

52. A pizzeria will bake and deliver a round pizza with a 16-inch diameter. Find the exact area of the top of the pizza and an approximation. Use 3.14 as an approximation for π .

The exact area is (1) .
(Simplify your answer. Type an exact answer in terms of π .)

The approximate area is (2) .
(Type an integer or decimal rounded to two decimal places as needed.)

- (1) ☐ inches (2) ☐ inches
☐ square inches ☐ square inches
☐ cubic inches ☐ cubic inches

Answers 64π

(1) square inches

200.96

(2) square inches

$$\begin{aligned} A &= \pi r^2 \\ A &= \pi (8)^2 \\ A &= \pi (8)(8) \\ A &= \pi (64) \\ A &= 64\pi \end{aligned}$$

$$\begin{aligned} D &= 16 \\ r &= \frac{1}{2}D \\ r &= \frac{1}{2}(16) \\ r &= 8 \end{aligned}$$

Now $r = 8$

$$\begin{aligned} A &\approx 3.14 r^2 \\ A &\approx 3.14 (8)^2 \\ A &\approx 3.14 (8)(8) \\ A &\approx 3.14 (64) \\ A &\approx 200.96 \end{aligned}$$

53. A $16\frac{1}{2}$ -foot by 6-foot concrete wall is to be built using concrete blocks. Find the area of the wall.

The area of the wall is (1) .
(Type an integer or a decimal.)

- (1) ☐ sq ft.
☐ cu ft.
☐ ft.

Answers 99

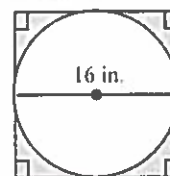
(1) sq ft.

$$\begin{aligned} A &= LW \\ A &= (16\frac{1}{2})(6) \\ A &= (16.5)(6) \\ A &= 99 \end{aligned}$$

54. Find the area of the shaded region. Use the approximation 3.14 for π .

$$\begin{aligned} D &= 16 \\ r &= \frac{1}{2}D = \frac{1}{2}(16) = 8 \\ r &= 8 \end{aligned}$$

$$\begin{aligned} A &= LW \\ A &= (16)(16) \\ A &= 256 \end{aligned}$$



The area of the shaded region is approximately (1) .
(Simplify your answer. Type an integer or a decimal.)

- (1) ☐ cu in.
☐ sq in.
☐ in.

Answers 55.04

(1) sq in.

$$\begin{aligned} A &= \pi r^2 \\ A &= 3.14 r^2 \\ A &= 3.14 (8)^2 \\ A &= 3.14 (8)(8) \\ A &= 3.14 (64) \\ A &= 200.96 \end{aligned}$$

Area Circle

$$\begin{aligned} 256.00 & \text{ Area Square} \\ - 200.96 & \text{ Area Circle} \\ \hline 55.04 & \text{ Shaded Area} \end{aligned}$$

55.04

Shaded area

55. Convert as indicated. When necessary, round to the nearest tenth of a degree.

176°F to degrees Celsius

176°F = °C

(Round to the nearest tenth as needed.)

Answer: 80

$$C = \frac{5}{9}(F - 32)$$

$$C = \frac{5}{9}(176 - 32)$$

$$C = \frac{5}{9}(144)$$

$$C = \frac{5}{9}(8 \times 16)$$

$$C = 5(16)$$

$$C = 80$$

56. Solve the equation for x.

$$-5(x + 6) - 4 = -34$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ☐ A. $x =$ (Simplify your answer. Type an integer or a fraction.)
- ☐ B. The solution is all real numbers.
- ☐ C. There is no solution.

Answer: A. $x =$ 0 (Simplify your answer. Type an integer or a fraction.)

$$-5(x + 6) - 4 = -34$$

$$-5x - 30 - 4 = -34$$

$$-5x - 34 = -34$$

$$-5x - 34 + 34 = -34 + 34$$

$$-5x = 0$$

$$\frac{-5x}{-5} = \frac{0}{-5}$$

$$x = 0$$

57. Solve the equation for y.

$$9x + y = 9$$

$$y =$$

Answer: $9 - 9x$

$$9x + y = 9$$

$$9x + y - 9x = 9 - 9x$$

$$y = 9 - 9x$$

OR

$$y = -9x + 9$$

58. Solve the formula for the specified variable.

$$Q = R + Rst \text{ for } t$$

$$t =$$

Answer: $\frac{Q - R}{Rs}$

$$Q = R + Rst$$

$$Q - R = R + Rst - R$$

$$Q - R = Rst$$

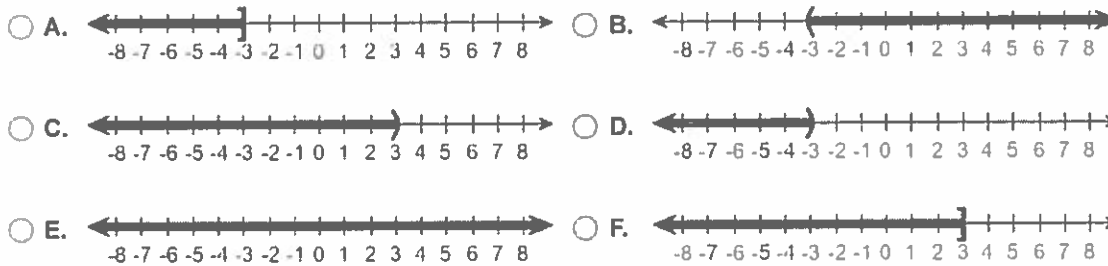
$$\frac{Q - R}{Rs} = \frac{Rst}{Rs}$$

$$\frac{Q - R}{Rs} = t$$

59. Solve the inequality. Graph the solution set and write it in interval notation.

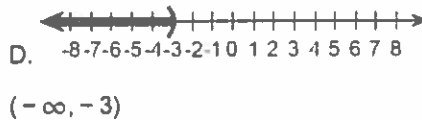
$$2x < -6$$

Choose the correct graph below.



The solution to the inequality $2x < -6$ is .
(Type your answer in interval notation.)

Answers



$$2x < -6$$

$$\frac{2x}{2} < \frac{-6}{2}$$

$$x < -3$$

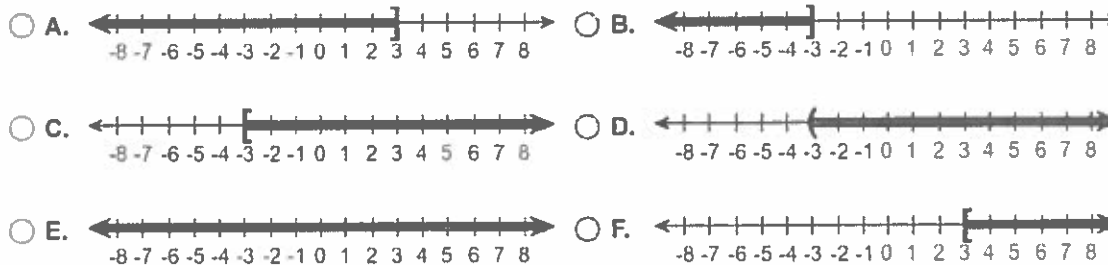


$$(-\infty, -3)$$

60. Solve the inequality. Graph the solution set and write it in interval notation.

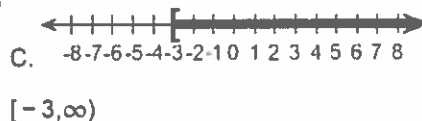
$$-7x \leq 21$$

Choose the correct graph below.



The solution to the inequality $-7x \leq 21$ is .
(Type your answer in interval notation.)

Answers

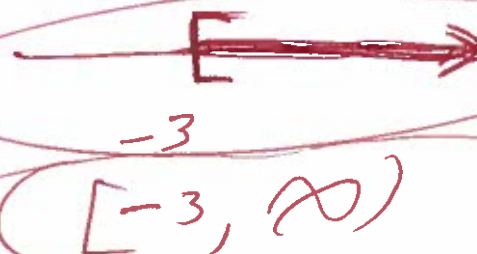


$$-7x \leq 21$$

$$\frac{-7x}{-7} \geq \frac{21}{-7}$$

$$x \geq -3$$

divided by a negative
turn alligator
around



61. Solve the inequality.

$3x - 4 < 9x + 14$

The solution set is . (Type your answer in interval notation.)

Answer: $(-3, \infty)$

$3x - 4 < 9x + 14$
 $3x - 4 + 4 < 9x + 14 + 4$
 $3x < 9x + 18$
 $3x - 9x < 9x + 18 - 9x$
 $-6x < 18$
 $\frac{-6x}{-6} > \frac{18}{-6}$
 $x > -3$
divide by negative turn all signs around
 $(-3, \infty)$

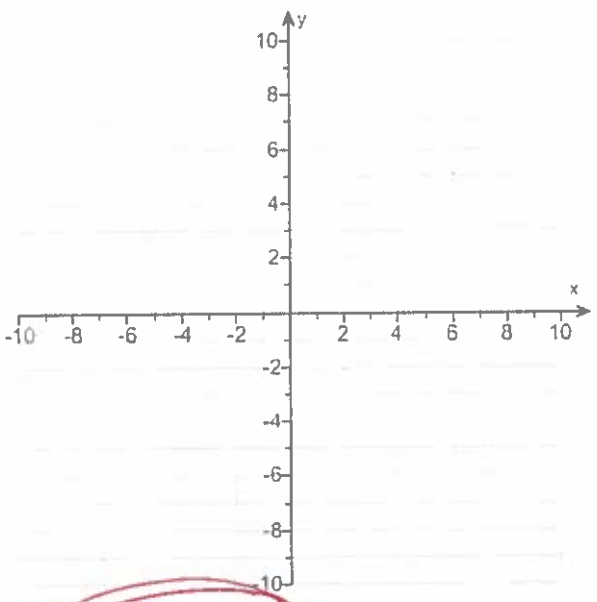


62.

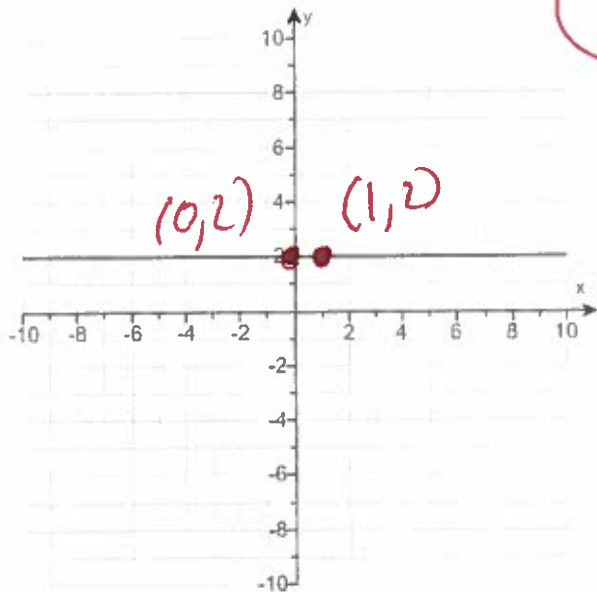
Graph the linear equation.

$y = 2$

Use the graphing tool to graph the linear equation.



Answer:



$y = 2$

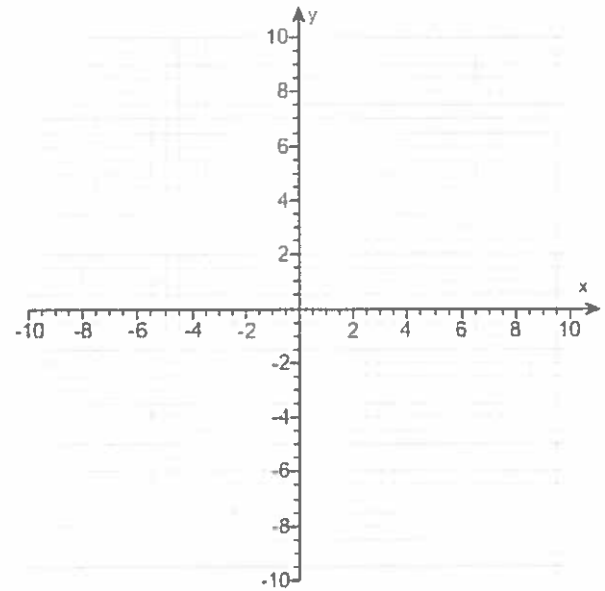
x	y
0	2
1	2

63.

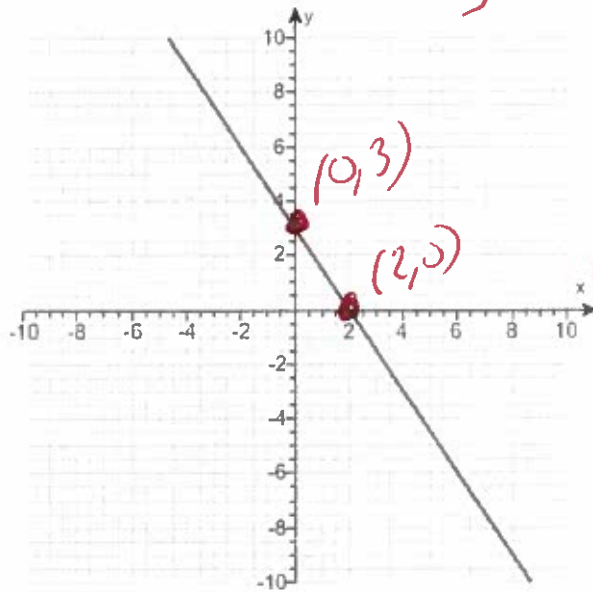
Graph the linear equation.

$$y = -\frac{3}{2}x + 3$$

Use the graphing tool to graph the linear equation.



Answer:



$$y = -\frac{3}{2}x + 3$$

$$y = -\frac{3}{2}(0) + 3$$

$$y = 0 + 3$$

$$y = 3$$

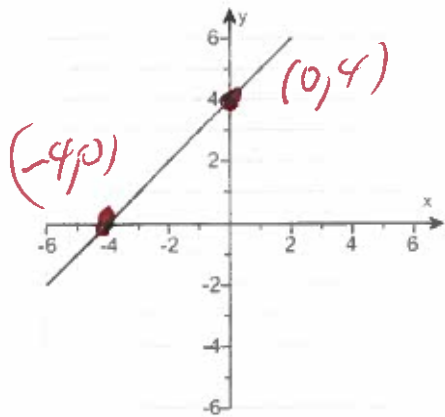
$$y = -\frac{3}{2}(2) + 3$$

$$y = -3 + 3$$

$$y = 0$$

x	y
0	3
2	0

64. Identify the intercepts.



Answers $(-4, 0)$
 $(0, 4)$

Identify all the x-intercepts.

(Type an ordered pair. Use a comma to separate answers as needed.)

Identify all the y-intercepts.

(Type an ordered pair. Use a comma to separate answers as needed.)

$(0, 4)$ y-intercept = 4
 $(-4, 0)$ x-intercept = -4

65.

Plot the intercepts to graph the equation.

$$7x - 2y = 14$$

Use the graphing tool to graph the equation. Use the intercepts when drawing the line. If only one intercept exists, use it and another point to draw the line.

find x-intercept let $y=0$

$$7x - 2(0) = 14$$

$$7x - 0 = 14$$

$$7x = 14$$

$$\frac{7x}{7} = \frac{14}{7}$$

$$x = 2$$

Answer:

find y-intercept

$$\text{let } x=0$$

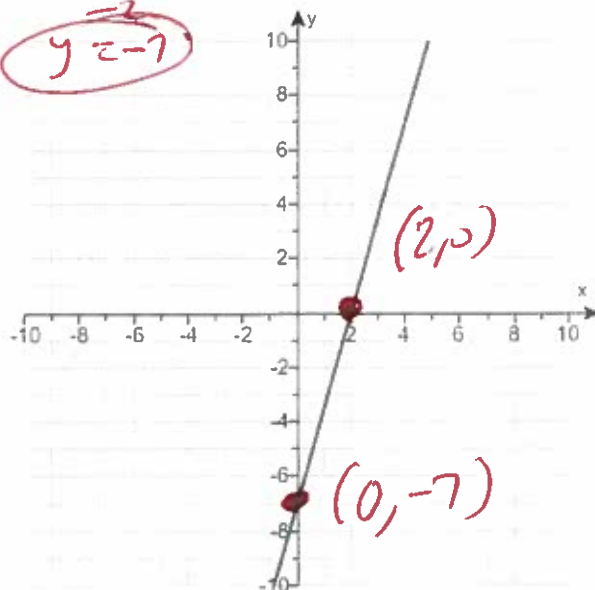
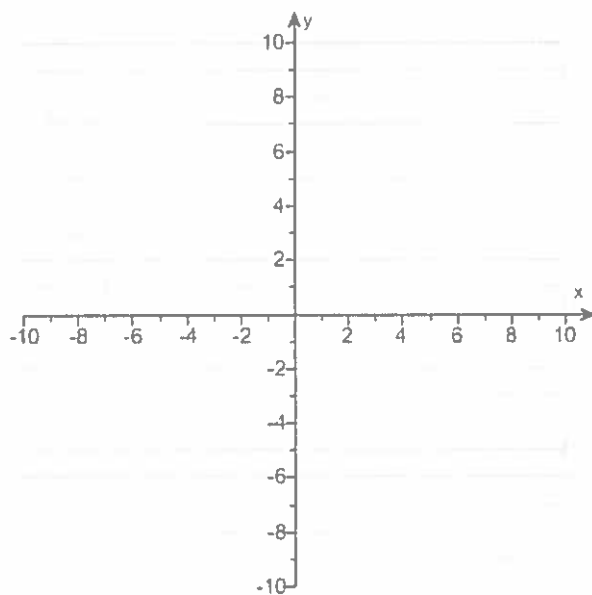
$$7(0) - 2y = 14$$

$$0 - 2y = 14$$

$$-2y = 14$$

$$\frac{-2y}{-2} = \frac{14}{-2}$$

$$y = -7$$



x	y
2	0
0	-7

66. Find the slope of the line that goes through the given points.

(7, -5) and (-8, 6)

 x_1, y_1 x_2, y_2

$$m = \frac{y_1 - y_2}{x_1 - x_2}$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

☐ A. The slope is _____. (Simplify your answer.)☐ B. The slope is undefined.

$$m = \frac{(-5) - (6)}{(7) - (-8)}$$

$$m = \frac{-5-6}{7+8}$$

$$m = \frac{-11}{15}$$

Answer: A. The slope is $-\frac{11}{15}$. (Simplify your answer.)

67. Find the slope of the line.

$$y = -2x + 9$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ☐ A. The slope is _____.
- ☐ B. The slope is undefined.

Answer: A. The slope is .

$y = mx + b$
 Slope = m y -intercept = b
 or $(0, b)$
 $y = -2x + 9$
 Slope = $m = -2$ y -intercept = 9
 or $(0, 9)$

68. Find the slope of the line.

$$7x - 9y = 63$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ☐ A. The slope of the line is _____ . (Simplify your answer.)
- ☐ B. The slope of the line is undefined.

Answer: A. The slope of the line is . (Simplify your answer.)

$7x - 9y = 63$
 $-9y = 63 - 7x$
 $y = -7 + \frac{7}{9}x$
 $y = \frac{7}{9}x - 7$
 Slope = $m = \frac{7}{9}$
 y -intercept = -7
 or $(0, -7)$

69. Solve the following equation for y.

$$y - 7 = 3(x - (-4))$$

y = (Simplify your answer.)

Answer: $3x + 19$

$y - 7 = 3(x - (-4))$
 $y - 7 = 3(x + 4)$
 $y - 7 = 3x + 12$
 $y - 7 + 7 = 3x + 12 + 7$
 $y = 3x + 19$

70. Find the slope-intercept form of the line whose slope is 4 and that passes through the point $(-2, 6)$.

The equation of the line is .
 (Type your answer in slope-intercept form.)

Answer: $y = 4x + 14$

$y - y_1 = m(x - x_1)$
 $y - 6 = 4(x - (-2))$
 $y - 6 = 4(x + 2)$
 $y - 6 = 4x + 8$
 $y = 4x + 14$

71. Find the value of $x^2 - 4x + 5$ for the given value of x.

$$x = -3$$

The value of the polynomial for $x = -3$ is . (Simplify your answer.)

Answer: 26

$x^2 - 4x + 5$
 $(-3)^2 - 4(-3) + 5$
 $9 + 12 + 5$
 $21 + 5$
 26

72. Determine whether each ordered pair is a solution of the system of linear equations.

$$\begin{cases} 2x - y = 4 \\ x + 9y = 21 \end{cases}$$

a. (5,6)

b. (3,2)

a. Is (5,6) a solution?

☐ Yes

☐ No

b. Is (3,2) a solution?

☐ No

☐ Yes

Answers No

Yes

(5,6) Subst
x y

$$2(5) - (6) = 4$$

$$10 - 6 = 4$$

$$4 = 4 \text{ Good}$$

$$(5) + 9(6) = 21$$

$$5 + 54 = 21$$

$$59 \neq 21$$

NOT a solution (5,6)
NO

(3,2) Subst

$$2(3) - (2) = 4$$

$$6 - 2 = 4$$

$$4 = 4 \text{ Good}$$

$$(3) + 9(2) = 21$$

$$3 + 18 = 21$$

$$21 = 21$$

Good a solution YES

YES (3,2)

73. Solve the system of equations using the substitution method.

$$\begin{cases} x + y = 8 \\ x = 3y \end{cases}$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

☐ A. The solution of the system is _____. (Type an ordered pair.)

☐ B. There are infinitely many solutions; $\{(x,y) | x + y = 8\}$ or $\{(x,y) | x = 3y\}$.

☐ C. There is no solution; $\{\}$ or $\emptyset$.

Answer: A. The solution of the system is . (Type an ordered pair.)

(3y) + y = 8

$$3y + y = 8$$

$$3y + 1y = 8$$

$$4y = 8$$

$$\frac{4y}{4} = \frac{8}{4}$$

$$y = 2$$

Subst

$$x = 3y$$

$$x = 3(2)$$

$$x = 6$$

$$(x, y)$$

$$(6, 2)$$

74. Solve the system of equations by the addition method.

$$\begin{cases} 5x - y = 15 \\ 6x + y = 29 \end{cases}$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

☐ A. The solution is _____. (Simplify your answer. Type an ordered pair.)

☐ B. There are infinitely many solutions; $\{(x,y) | 5x - y = 15\}$ or $\{(x,y) | 6x + y = 29\}$.

☐ C. There is no solution; $\{\}$ or $\emptyset$.

Answer: A. The solution is . (Simplify your answer. Type an ordered pair.)

$$5x - y = 15$$

$$6x + y = 29$$

$$11x + 0 = 44$$

$$11x = 44$$

$$\frac{11x}{11} = \frac{44}{11}$$

$$x = 4$$

Subst x

$$5(4) - y = 15$$

$$20 - y = 15$$

$$20 - y - 20 = 15 - 20$$

$$-y = -5$$

$$\frac{-y}{-1} = \frac{-5}{-1}$$

$$y = 5$$

$$(x, y)$$

$$(4, 5)$$

75. Solve the system of equations by the addition method.

$$\begin{cases} x + 2y = 6 \\ 2x + 5y = 16 \end{cases} \quad \begin{pmatrix} -5 \\ 2 \end{pmatrix} \text{ mult}$$

Select the correct choice below and, if necessary, fill in the answer box within your choice.

- ☐ A. The solution is . (Simplify your answer. Type an ordered pair.)
☐ B. There are infinitely many solutions; $\{(x,y) | x + 2y = 6\}$ or $\{(x,y) | 2x + 5y = 16\}$.
☐ C. There is no solution; $\emptyset$ or $\emptyset$.

Answer: A. The solution is $(-2, 4)$. (Simplify your answer. Type an ordered pair.)

$$\begin{array}{r} -5x - 10y = -30 \\ 4x + 10y = 32 \\ \hline -1x + 0 = 2 \end{array}$$

$$\begin{array}{r} -1x = 2 \\ \frac{-1x}{-1} = \frac{2}{-1} \\ x = -2 \end{array}$$

$$\frac{2y}{2} = \frac{8}{2}$$

$$y = 4$$

$$(x, y)$$

$$(-2, 4)$$

$$\text{Subst } -2 + 2y = 6$$

$$-2 + 2y + 2 = 6 + 2$$

$$2y = 8$$

76. Two numbers total 33 and have a difference of 11. Find the two numbers.

The larger number is , and the smaller number is .

Answers 22

11

$$(x, y) = (22, 11)$$

$$x + y = 33$$

$$x - y = 11$$

Subst

$$2x + 0 = 44$$

$$22 + y = 33$$

$$2x = 44$$

$$22 + y - 22 = 33 - 22$$

$$\frac{2x}{2} = \frac{44}{2}$$

$$y = 11$$

77. Use the product rule to simplify the expression. Write the result using exponents.

$$(-9m^6n^6)(4mn^2) = -36m^{6+1}n^{6+2}$$

$$(-9m^6n^6)(4mn^2) = \boxed{} = -36m^7n^8$$

Answer: $-36m^7n^8$

78. Use the product rule to simplify the expression. Write the results using exponents.

$$(4z^{11})(-6z^7)(z^3) = (4z^{11})(-6z^7)(1z^3) =$$

$$(4z^{11})(-6z^7)(z^3) = \boxed{} = -24z^{11+7+3}$$

Answer: $-24z^{21}$

$$-24z^{21} =$$

79. Use the power rule to simplify the expression.

$$(z^7)^8$$

$$(z^7)^8 = \boxed{}$$

(Simplify your answer. Type exponential notation with positive exponents.)

Answer: z^{56}

$$\begin{array}{r} (z^7)^8 \\ = \\ z^{(7)(8)} \\ = \\ z^{56} \end{array}$$

80. Use the power rule and the power of a product rule to simplify the expression.

$$(2q^9)^5 = \boxed{}$$

Answer: $32q^{45}$

$$\begin{aligned}
 &= (2^1 q^9)^5 \\
 &= 2^{1(5)} q^{9(5)} \\
 &= 2^5 q^{45} \\
 &= 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 q^{45} \\
 &= 32 q^{45}
 \end{aligned}$$

81. Use the power rule and the power of a product or quotient rule to simplify the expression.

$$(-7a^3b^5c)^2 = \boxed{} \text{ (Type your answer using exponential notation.)}$$

Answer: $49a^6b^{10}c^2$

$$\begin{aligned}
 &= (-7)^2 a^{3(2)} b^{5(2)} c^{1(2)} \\
 &= (-7)^2 a^6 b^{10} c^2 \\
 &= 49 a^6 b^{10} c^2
 \end{aligned}$$

82. Use the power rule, the power of a product rule, and the power of a quotient rule to simplify the expression.

$$\left(\frac{6xz^2}{y^5}\right)^2 = \boxed{}$$

Answer: $\frac{36x^2z^4}{y^{10}}$

$$\begin{aligned}
 &= \frac{(6^1 x^1 z^2)^2}{y^{5(2)}} \\
 &= \frac{6^{1(2)} x^{1(2)} z^{2(2)}}{y^{10}} \\
 &= \frac{6^2 x^2 z^4}{y^{10}} \\
 &= \frac{36 x^2 z^4}{y^{10}}
 \end{aligned}$$

83. Simplify the expression.

$$a^3 a^4 a^6 = \boxed{}$$

Answer: a^{13}

$$\begin{aligned}
 &a^3 \cdot a^4 \cdot a^6 \\
 &a^{3+4+6} \\
 &a^{13}
 \end{aligned}$$

84. Simplify the expression. Assume that all bases are not equal to 0.

$$\frac{9x^4y^2z}{x^2yz}$$

=

$$\frac{9x^4y^2z^1}{x^2y^1z^1} =$$

$$\frac{9x^4y^2z}{x^2yz} = \boxed{}$$

$$9x^{4-2}y^{2-1}z^{1-1}$$

Answer: $9x^2y$

$$9x^2y(1) = 9x^2y$$

85. If $P(x) = x^2 + x + 3$, find $P(6)$.

$$P(6) = \boxed{}$$

$$P(6) = (6)^2 + (6) + 3$$

$$P(6) = (6)(6) + (6) + 3$$

$$P(6) = 36 + 6 + 3$$

$$P(6) = 42 + 3$$

$$P(6) = 45$$

Answer: 45

86. Simplify the following expression by combining the like terms.

$$-7a^2 - 6ab + 7b^2 - 3a^2 - 6ab + 3b^2$$

$$-10a^2 - 12ab + 10b^2$$

$$-7a^2 - 6ab + 7b^2 - 3a^2 - 6ab + 3b^2 = \boxed{}$$

Answer: $-10a^2 - 12ab + 10b^2$

87. Subtract.

$$(6y^2 + 6y - 4) - (-9y + 3)$$

$$= 6y^2 + 6y - 4 + 9y - 3 =$$

$$(6y^2 + 6y - 4) - (-9y + 3) = \boxed{} \text{ (Simplify your answer.)}$$

$$6y^2 + 15y - 7 =$$

Answer: $6y^2 + 15y - 7$

88. Add.

$$(-4y^2 - 7y) + (6y^2 + y - 3)$$

=

$$-4y^2 - 7y + 6y^2 + y - 3 =$$

$$(-4y^2 - 7y) + (6y^2 + y - 3) = \boxed{} \text{ (Do not factor.)}$$

$$2y^2 - 6y - 3 =$$

Answer: $2y^2 - 6y - 3$

89. Multiply.

$$(x+7)(x^3-5x+6) =$$

$$(x+7)(x^3-5x+6) = \boxed{}$$

$$\text{Answer: } x^4 + 7x^3 - 5x^2 - 29x + 42$$

$$x^4 - 5x^2 + 6x + 7x^3 - 35x + 42 =$$

$$x^4 + 7x^3 - 5x^2 - 29x + 42 =$$

90. Multiply vertically.

$$(x^2+5x-4)(3x^2-9x+4) = 3x^4 - 9x^3 + 4x^2 + 15x^3 - 45x^2 + 20x - 12x^2 + 36x - 16 =$$

$$(x^2+5x-4)(3x^2-9x+4) = \boxed{} \text{ (Simplify your answer.)}$$

$$\text{Answer: } 3x^4 + 6x^3 - 53x^2 + 56x - 16$$

$$3x^4 + 6x^3 - 53x^2 + 56x - 16 =$$

91. Multiply.

$$-3x(x^2+7x-4) =$$

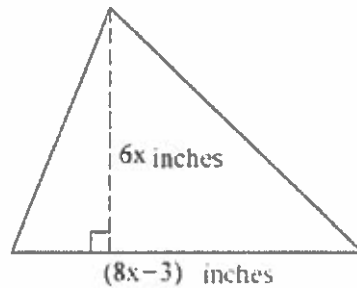
$$-3x(x^2+7x-4) = \boxed{} \text{ (Simplify your answer.)}$$

$$\text{Answer: } -3x^3 - 21x^2 + 12x$$

$$-3x(x^2+7x-4) =$$

$$-3x^3 - 21x^2 + 12x =$$

92. Find the area of the triangle.



$$B = 8x - 3$$

$$H = 6x$$

$$\boxed{} \text{ sq in.}$$

$$\text{Answer: } 24x^2 - 9x$$

$$A = \frac{1}{2}BH$$

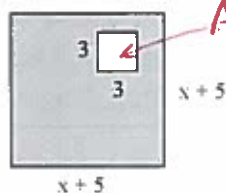
$$A = \frac{1}{2}(8x-3)(6x)$$

$$A = \frac{1}{2}(48x^2 - 18x)$$

$$A = \frac{48x^2}{2} - \frac{18x}{2}$$

$$A = 24x^2 - 9x$$

93. Write a polynomial that describes the area of the shaded region.



The area is

Answer: $x^2 + 10x + 16$

$$\begin{aligned} \text{Area 1} &= (x+5)(x+5) \\ \text{Area 2} &= (3)(3) \\ \text{Shaded Area} &= (x+5)(x+5) - (3)(3) \\ &= (x^2 + 5x + 5x + 25) - (9) \\ &= x^2 + 10x + 25 - 9 \\ &= x^2 + 10x + 16 \end{aligned}$$

94. Multiply using the FOIL method.

$$6(y-3)(8y-1)$$

$$6(y-3)(8y-1) = \text{}$$

Answer: $48y^2 - 150y + 18$

$$\begin{aligned} 6(y-3)(8y-1) &= \\ 6(8y^2 - 1y - 24y + 3) &= \\ 6(8y^2 - 25y + 3) &= \\ 48y^2 - 150y + 18 &= \end{aligned}$$

95. Multiply.

$$(x+7)^2$$

$$(x+7)^2 = \text{} \text{ (Simplify your answer.)}$$

Answer: $x^2 + 14x + 49$

$$\begin{aligned} (x+7)^2 &= \\ (x+7)(x+7) &= \\ x^2 + 7x + 7x + 49 &= \\ x^2 + 14x + 49 &= \end{aligned}$$

96. Multiply.

$$(a-6)(a+6)$$

$$(a-6)(a+6) = \text{} \text{ (Simplify your answer.)}$$

Answer: $a^2 - 36$

$$\begin{aligned} (a-6)(a+6) &= \\ a^2 + 6a - 6a - 36 &= \\ a^2 - 36 &= \end{aligned}$$

97. Multiply the monomial and the polynomial.

$$7x^2(2x^3 - 3x^2 + 8)$$

$$7x^2(2x^3 - 3x^2 + 8) = \text{}$$

Answer: $14x^5 - 21x^4 + 56x^2$

$$\begin{aligned} 7x^2(2x^3 - 3x^2 + 8) &= \\ 14x^5 - 21x^4 + 56x^2 &= \end{aligned}$$

98. Use a special product to multiply, if possible.

$(5b - 2c)^2$

Choose the expression equivalent to $(5b - 2c)^2$.

- ☐ A. $25b^2 + 4c^2$
☐ B. $25b^2 + 20bc + 4c^2$
☐ C. $25b^2 - 4c^2$
☒ D. $25b^2 - 20bc + 4c^2$
☐ E. none of these

Answer: D. $25b^2 - 20bc + 4c^2$

$$\begin{aligned}
 (5b - 2c)^2 &= (5b - 2c)(5b - 2c) \\
 &= 25b^2 - 10bc - 10bc + 4c^2 \\
 &= 25b^2 - 20bc + 4c^2
 \end{aligned}$$

99. Simplify the following expression.

5^{-3}

 $5^{-3} =$ (Type an integer or a simplified fraction.)Answer: $\frac{1}{125}$

$$\begin{aligned}
 5^{-3} &= \frac{1}{5^3} = \text{rewrite} \rightarrow \frac{1}{125} \\
 5^{-3} &= \frac{1}{5 \cdot 5 \cdot 5}
 \end{aligned}$$

100. Simplify the following expression.

$\left(\frac{1}{3}\right)^{-3}$

 $\left(\frac{1}{3}\right)^{-3} =$ (Type an integer or a simplified fraction.)

Answer: 27

$$\begin{aligned}
 \left(\frac{1}{3}\right)^{-3} &= 3^{(-1)(-3)} = 3^3 = 3 \cdot 3 \cdot 3 \\
 &= 27
 \end{aligned}$$

101. Simplify the expression. Write the result using positive exponents only. Assume that all bases are not equal to 0.

$\frac{y^{-4}}{y}$

$\frac{y^{-4}}{y} =$

Answer: $\frac{1}{y^5}$

$$\begin{aligned}
 \frac{y^{-4}}{y} &= \frac{1}{y^1 \cdot y^4} \\
 &= \frac{1}{y^{1+4}} = \frac{1}{y^5}
 \end{aligned}$$

102. Simplify. Use positive exponents for any variables. Assume that all bases are not equal to 0.

$$\frac{k^{-1}}{k^{-9}}$$

$$\frac{k^{-1}}{k^{-9}} = \frac{k^9}{k^1} = k^{9-1} = k^8$$

$$\frac{k^{-1}}{k^{-9}} = \boxed{} \quad (\text{Use positive exponents only.})$$

rewrite

Answer: k^8

103. Simplify the following expression. Write the result using positive exponents only.

$$(-2x^4y^{-4})(4x^{-1}y^2) = -8x^{4-1}y^{-4+2} = -8x^3y^{-2} = \frac{-8x^3}{y^2}$$

$$(-2x^4y^{-4})(4x^{-1}y^2) = \boxed{} \quad (\text{Type exponential notation with positive exponents.})$$

Answer: $-\frac{8x^3}{y^2}$

104. Simplify the expression. Assume that all bases are not equal to 0.

$$(a^{-3}b^2)^{-4} = a^{-3(-4)}b^{2(-4)} = a^{12}b^{-8} = \frac{a^{12}}{b^8}$$

$$(a^{-3}b^2)^{-4} = \boxed{} \quad (\text{Use positive exponents only.})$$

Answer: $\frac{a^{12}}{b^8}$

105. Write the number in scientific notation.

77,000

$$77,000 = \boxed{} \quad (\text{Use the multiplication symbol in the math palette as needed.})$$

Answer: 7.7×10^4

$$77000 =$$

$$7.7000 \times 10^4 =$$

$$7.7 \times 10^4 =$$

106. Write the number in scientific notation.

0.00000193

$$0.00000193 = \boxed{} \quad (\text{Use the multiplication symbol in the math palette as needed.})$$

Answer: 1.93×10^{-6}

$$0.00000193 =$$

$$1.93 \times 10^{-6} =$$

107. Divide.

$$\frac{15p^6 + 20p^5}{5p}$$

$$\frac{15p^6 + 20p^5}{5p} = \boxed{}$$

Answer: $3p^5 + 4p^4$

$$\frac{15p^6}{5p^1} + \frac{20p^5}{5p^1} = 3p^{6-1} + 4p^{5-1} = 3p^5 + 4p^4 =$$

108. Find the GCF for the given list.

27, 45

The GCF is $\boxed{}$.

Answer: 9

Primes 2, 3, 5, 7, 11, 13, ...

$$45 = 3 \cdot 3 \cdot 5$$

$$27 = 3 \cdot 3 \cdot 3$$

$$GCF = 3 \cdot 3 = 9$$

$$\begin{array}{r} 3 \overline{)27} \\ 3 \overline{)9} \\ 3 \overline{)3} \\ 1 \end{array}$$

$$\begin{array}{r} 3 \overline{)45} \\ 3 \overline{)15} \\ 5 \overline{)5} \\ 1 \end{array}$$

109. Factor out the greatest common factor from the polynomial.

 $5x + 30$
 $5x + 30 = \boxed{}$ (Type your answer in factored form.)

Answer: $5(x + 6)$

$$5x + 30 =$$

$$5(x + 6) =$$

110. Factor.

 $16xy - 54x^2$
 $16xy - 54x^2 = \boxed{}$ (Factor completely.)

Answer: $2x(8y - 27x)$

$$16xy - 54x^2 =$$

$$2x(8y - 27x) =$$

111. Factor the trinomial completely.

$$x^2 - 2x - 63$$

$$= (x + 7)(x - 9)$$

$$\begin{array}{r} \text{Poss. } b, c \\ 63.1 \\ 21.3 \\ 7.9 \end{array}$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

☐ A. $x^2 - 2x - 63 = \boxed{}$ (Type your answer in factored form.)

☐ B. The polynomial is prime.

Answer: A. $x^2 - 2x - 63 = \boxed{(x + 7)(x - 9)}$ (Type your answer in factored form.)

112. Factor the following binomial completely.

$$196x^2 - 81y^2$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

☐ A. $196x^2 - 81y^2 =$ _____ (Factor completely.)

☐ B. The polynomial is prime.

Answer: A. $196x^2 - 81y^2 =$ $(14x + 9y)(14x - 9y)$ (Factor completely.)

Formula
 $a^2 - b^2 = (a+b)(a-b)$

$$196x^2 - 81y^2$$

$$(14x)^2 - (9y)^2 =$$

$$(14x + 9y)(14x - 9y) =$$

113. Solve the equation.

$$(x - 3)(x + 2) = 0$$

$$x =$$

(Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)

Answer: 3, -2

$$\begin{aligned} &\rightarrow x - 3 = 0 \quad \text{OR} \quad x + 2 = 0 \\ &x - 3 + 3 = 0 + 3 \quad \text{OR} \quad x + 2 - 2 = 0 - 2 \\ &x = 3 \quad \text{OR} \quad x = -2 \end{aligned}$$

114. Solve the equation.

$$3x(x - 9) = 0$$

$$x =$$
 (Use a comma to separate answers as needed.)

Answer: 9, 0

$$\begin{aligned} &\rightarrow 3x = 0 \quad \text{OR} \quad x - 9 = 0 \\ &\frac{3x}{3} = \frac{0}{3} \quad \text{OR} \quad x - 9 + 9 = 0 + 9 \\ &x = 0 \quad \text{OR} \quad x = 9 \end{aligned}$$

115. Solve the equation.

$$(6x + 7)(2x - 3) = 0$$

$$x =$$

(Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)

Answer: $-\frac{7}{6}, \frac{3}{2}$

$$\begin{aligned} &\rightarrow 6x + 7 = 0 \quad \text{OR} \quad 2x - 3 = 0 \\ &6x + 7 - 7 = 0 - 7 \quad \text{OR} \quad 2x - 3 + 3 = 0 + 3 \\ &6x = -7 \quad \text{OR} \quad 2x = 3 \\ &\frac{6x}{6} = \frac{-7}{6} \quad \text{OR} \quad \frac{2x}{2} = \frac{3}{2} \\ &x = -\frac{7}{6} \quad \text{OR} \quad x = \frac{3}{2} \end{aligned}$$

116. Solve the equation.

$$x^2 - 11x + 24 = 0$$

$$x =$$

(Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)

Answer: 8, 3

$$\begin{aligned} &\rightarrow (x - 3)(x - 8) = 0 \\ &x - 3 = 0 \quad \text{OR} \quad x - 8 = 0 \\ &x - 3 + 3 = 0 + 3 \quad \text{OR} \quad x - 8 + 8 = 0 + 8 \\ &x = 3 \quad \text{OR} \quad x = 8 \end{aligned}$$

Possibly

$$\begin{aligned} &2x + 1 \\ &12 + 2 \\ &6 + 4 \\ &3 + 8 \end{aligned}$$

117. Solve.

$$x^2 + 2x - 15 = 0$$

x =

(Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)

Answer: -5,3

$$\begin{aligned} &\rightarrow (x-3)(x+5) = 0 \\ &x-3=0 \quad \text{OR} \quad x+5=0 \\ &x-3+3=0+3 \quad \text{OR} \quad x+5-5=0-5 \\ &x=3 \quad \text{OR} \quad x=-5 \end{aligned}$$

Possible factors: 15, 1
3, 5

118. Solve the equation.

$$x^3 - 10x^2 + 16x = 0$$

x =

(Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)

Answer: 0,2,8

$$\begin{aligned} &\rightarrow x(x^2 - 10x + 16) = 0 \\ &x(x-2)(x-8) = 0 \\ &x=0 \quad \text{OR} \quad x-2=0 \quad \text{OR} \quad x-8=0 \\ &x-2+2=0+2 \quad \text{OR} \quad x-8+8=0+8 \\ &x=2 \quad \text{OR} \quad x=8 \end{aligned}$$

Possible factors: 16, 1
2, 8
4, 4

119. Solve.

$$2x^2 - 9x - 35 = 0$$

x =

(Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)

Answer: $-\frac{5}{2}, 7$

$$\begin{aligned} &\rightarrow (2x+5)(x-7) = 0 \\ &2x+5=0 \quad \text{OR} \quad x-7=0 \\ &2x+5-5=0-5 \quad \text{OR} \quad x-7+7=0+7 \\ &2x=-5 \quad \text{OR} \quad x=7 \\ &\frac{2x}{2} = \frac{-5}{2} \quad \text{OR} \quad x=7 \\ &x = -\frac{5}{2} \end{aligned}$$

Possible factors: 2, 16
35, 1
7, 5

120. Find the domain of the rational function.

$$C(x) = \frac{x+7}{x^2-16}$$

$$\begin{aligned} &\text{Set } x^2 - 16 = 0 \\ &(x)^2 - (4)^2 = 0 \\ &(x+4)(x-4) = 0 \end{aligned}$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ☐ A. The domain is $\{x \mid x \text{ is a real number and } x \neq \text{ }\}$.
(Simplify your answer. Type an integer or a fraction. Use a comma to separate answers as needed.)
- ☐ B. The domain is $\{x \mid x \text{ is a real number}\}$.

$$\begin{aligned} &x+4=0 \quad \text{OR} \quad x-4=0 \\ &x+4-4=0-4 \quad \text{OR} \quad x-4+4=0+4 \\ &x=-4 \quad \text{OR} \quad x=4 \end{aligned}$$

Answer: A. The domain is $\{x \mid x \text{ is a real number and } x \neq \text{ -4,4 }\}$.

(Simplify your answer. Type an integer or a fraction. Use a comma to separate answers as needed.)

Domain is $\{x \mid x \text{ is a real number and } x \neq -4, \text{ or } 4\}$

121. Simplify the expression.

$$\frac{x+7}{x^2-3x-70}$$

$$\frac{(x+7)}{(x+7)(x-10)} =$$

$$\frac{70.1}{10.7} = 35.2$$

Select the correct choice below and fill in any answer boxes in your choice.

- ☐ A. $\frac{x+7}{x^2-3x-70} =$ _____ (Simplify your answer.)
- ☐ B. The expression cannot be simplified.

Answer: A. $\frac{x+7}{x^2-3x-70} = \frac{1}{x-10}$ (Simplify your answer.)

$$\frac{1(x+7)}{(x+7)(x-10)} =$$

$$\frac{1}{x-10} =$$

122. Find the product and simplify if possible.

$$\frac{5x}{y^2} \cdot \frac{6y}{7x} =$$

$$\frac{5x}{y \cdot y} \cdot \frac{2 \cdot 3 \cdot y}{7x} = \frac{5 \cdot 2 \cdot 3}{7y}$$

$$\frac{5x}{y^2} \cdot \frac{6y}{7x} = \frac{30}{7y}$$
 (Simplify your answer. Use positive exponents only.)

$$= \frac{30}{7y}$$

Answer: $\frac{30}{7y}$

123. Find the product and simplify if possible.

$$\frac{x^2-64}{x^2-4x-32} \cdot \frac{x+4}{x}$$

$$\frac{(x^2-64)}{x^2-4x-32} \cdot \frac{x+4}{x} =$$

$$\frac{x^2-64}{x^2-4x-32} \cdot \frac{x+4}{x} =$$
 (Simplify your answer.)

$$\frac{(x+8)(x-8)}{(x+4)(x-8)} \cdot \frac{(x+4)}{(x)} =$$

Answer: $\frac{x+8}{x}$

$$\frac{x+8}{x} =$$

formula
 $a^2 - b^2 = (a+b)(a-b)$

124. Find the quotient and simplify the result.

$$\frac{16x^2}{y^5} \div \frac{8x^2y^5}{9} =$$

$$\frac{16x^2}{y^5} \div \frac{8x^2y^5}{9} = \boxed{} \text{ (Simplify your answer.)}$$

Answer: $\frac{18}{y^{10}}$

$$\frac{16x^2}{y^5} \div \frac{8x^2y^5}{9} =$$

$$\frac{(2)(8)x^2}{y^5} \div \frac{(8)x^2y^5}{9} =$$

$$\frac{2 \cdot 9}{y^5 \cdot y^5} = \frac{18}{y^{10}}$$

125. Add the rational expressions.

$$\frac{5m}{2n} + \frac{7m}{2n} =$$

$$\frac{5m}{2n} + \frac{7m}{2n} = \boxed{} \text{ (Simplify your answer.)}$$

Answer: $\frac{6m}{n}$

$$\frac{5m}{2n} + \frac{7m}{2n} =$$

$$\frac{5m+7m}{2n} =$$

$$\frac{12m}{2n} =$$

$$\frac{(2)(6)(m)}{(2)n} = \frac{6m}{n}$$

126. Subtract the rational expressions.

$$\frac{7x+9}{x^2-8x+12} - \frac{6x+15}{x^2-8x+12} =$$

$$\frac{7x+9}{x^2-8x+12} - \frac{6x+15}{x^2-8x+12} = \boxed{} \text{ (Simplify your answer.)}$$

Answer: $\frac{1}{x-2}$

$$\frac{(7x+9) - (6x+15)}{x^2-8x+12} =$$

$$\frac{7x+9-6x-15}{x^2-8x+12} =$$

$$\frac{x-6}{x^2-8x+12} =$$

$$\frac{x-6}{(x-2)(x-6)} =$$

$$\frac{1(x-6)}{(x-2)(x-6)} =$$

$$\frac{1}{x-2} =$$

127. Solve the equation.

$$2 - \frac{5}{a} = 9$$

$$\begin{aligned} \frac{2}{1}(a) - \frac{5}{a}(a) &= 9(a) \\ 2(a) - 5(1) &= 9a \\ 2a - 5 &= 9a \end{aligned}$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ☐ A. The solution is _____.
(Type an integer or a simplified fraction. Use a comma to separate answers as needed.)
- ☐ B. There is no solution.

Answer: A. The solution is

$$-\frac{5}{7}$$

(Type an integer or a simplified fraction. Use a comma to separate answers as needed.)

128. Solve the equation.

$$\frac{x-5}{4} = \frac{x}{9}$$

$$\begin{aligned} 9(x-5) &= 4(x) \text{ cross mult} \\ 9x - 45 &= 4x \\ 9x - 45 + 45 &= 4x + 45 \\ 9x &= 4x + 45 \end{aligned}$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ☐ A. The solution is _____.
(Type an integer or a simplified fraction. Use a comma to separate answers as needed.)
- ☐ B. There is no solution.

Answer: A. The solution is

$$9$$

(Type an integer or a simplified fraction. Use a comma to separate answers as needed.)

129. Solve the equation.

$$\frac{9}{y} + \frac{2}{7} = \frac{7}{7y}$$

$$\begin{aligned} \frac{9}{y}(7y) + \frac{2}{7}(7y) &= \frac{7}{7y}(7y) \\ 9(7) + 2(7) &= 7(1) \end{aligned}$$

Select the correct answer below and, if necessary, fill in the answer box to complete your choice.

- ☐ A. $y =$ _____. (Use a comma to separate answers if needed.)
- ☐ B. There is no solution.

Answer: A. $y =$

$$-28$$

(Use a comma to separate answers if needed.)

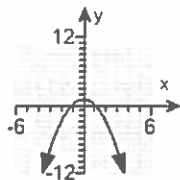
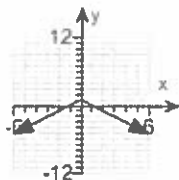
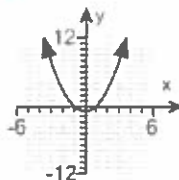
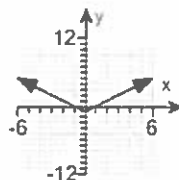
$$\begin{aligned} 2y &= -56 \\ \frac{2y}{2} &= \frac{-56}{2} \end{aligned}$$

$$y = -28$$

130. Graph the function.

$$f(x) = x^2 - 1$$

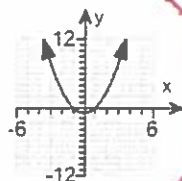
Choose the correct graph below.

☐ A.☐ B.☒ C.☐ D.

x	f(x)
-1	0
0	-1
1	0

Answer:

C.



$$f(x) = x^2 - 1$$

$$f(-1) = (-1)^2 - 1 = (-1)(1) - 1 = 1 - 1 = 0$$

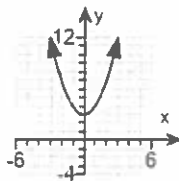
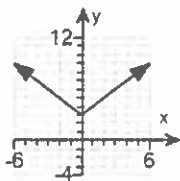
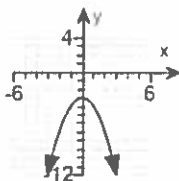
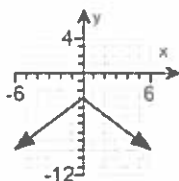
$$f(0) = (0)^2 - 1 = (0)(0) - 1 = 0 - 1 = -1$$

$$f(1) = (1)^2 - 1 = (1)(1) - 1 = 1 - 1 = 0$$

131. Graph the function.

$$h(x) = |x| + 3$$

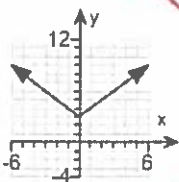
Choose the correct graph below.

☐ A.☒ B.☐ C.☐ D.

x	h(x)
-1	4
0	3
1	4

Answer:

B.



$$h(x) = |x| + 3$$

$$h(-1) = |-1| + 3 = 1 + 3 = 4$$

$$h(0) = |0| + 3 = 0 + 3 = 3$$

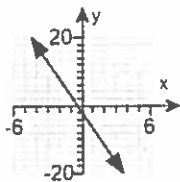
$$h(1) = |1| + 3 = 1 + 3 = 4$$

132. Graph the function.

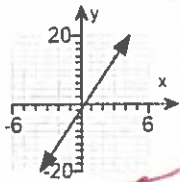
$$f(x) = 5x - 2$$

Choose the correct graph below.

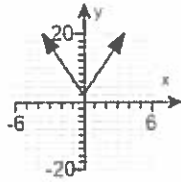
☐ A.



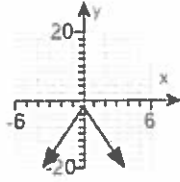
☒ B.



☐ C.

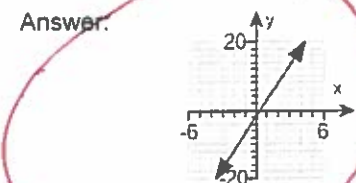


☐ D.



$$\begin{array}{r|l} x & f(x) \\ \hline 0 & -2 \\ 1 & 3 \end{array}$$

Answer:



B.

$$f(x) = 5x - 2$$

$$f(0) = 5(0) - 2 = 0 - 2 = -2$$

$$f(1) = 5(1) - 2 = 5 - 2 = 3$$

133. Simplify by factoring. Assume that all variables under radicals represent nonnegative numbers.

$$\sqrt{25x^6} = \sqrt{5^2 x^6} = 5^{1/2} x^{6/2} = 5^1 x^3 = 5x^3$$

Select the correct choice below and, if necessary, fill in the answer box that completes your choice.

- ☐ A. $\sqrt{25x^6} =$ _____
(Type an exact answer, using radicals as needed.)
- ☐ B. The square root is not a real number.

Answer: A. $\sqrt{25x^6} =$ (Type an exact answer, using radicals as needed.)

134. Find the cube root.

$$\sqrt[3]{343}$$

$$\sqrt[3]{7^3} = 7^{3/3} = 7^1 = 7$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ☐ A. $\sqrt[3]{343} =$ _____
- ☐ B. The cube root is not a real number.

Answer: A. $\sqrt[3]{343} =$

Primes 2, 3, 5, 7, 11, 13, ...

$$\begin{array}{r} 7 \overline{) 343} \\ \underline{7} 9 \\ 7 \overline{) 7} \\ \underline{7} \\ 0 \end{array}$$

$$343 = 7 \cdot 7 \cdot 7$$

$$= 7^3$$

135. Simplify the radical.

$$\sqrt{\frac{49}{64}}$$

$$\frac{\sqrt{49}}{\sqrt{64}} = \frac{7}{8}$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ☐ A. $\sqrt{\frac{49}{64}} =$ _____ (Type an integer or a simplified fraction.)
- ☐ B. The square root is not a real number.

Answer: A. $\sqrt{\frac{49}{64}} =$ (Type an integer or a simplified fraction.)

136.

Identify the domain and then graph the function, using the table to the right.

$f(x) = \sqrt{x - 11}$

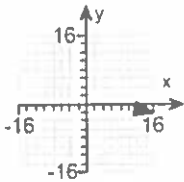
The domain of the function $f(x)$ is .
(Type your answer in interval notation.)

Complete the table to the right.

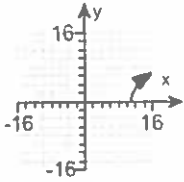
Graph the function. Choose the correct graph to the right.

x	f(x)
11	
12	
15	
20	

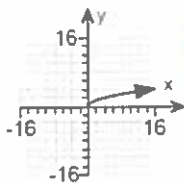
☐ A.



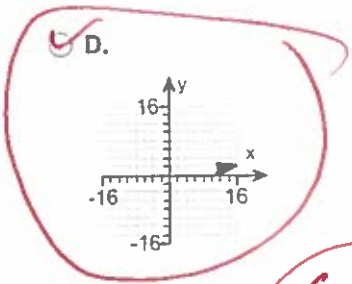
☐ B.



☐ C.



☒ D.



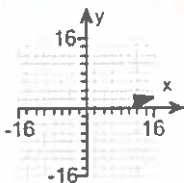
Answers [11,∞)

0

1

2

3



D.

$f(x) = \sqrt{x-11}$

$f(11) = \sqrt{11-11} = \sqrt{0} = 0$

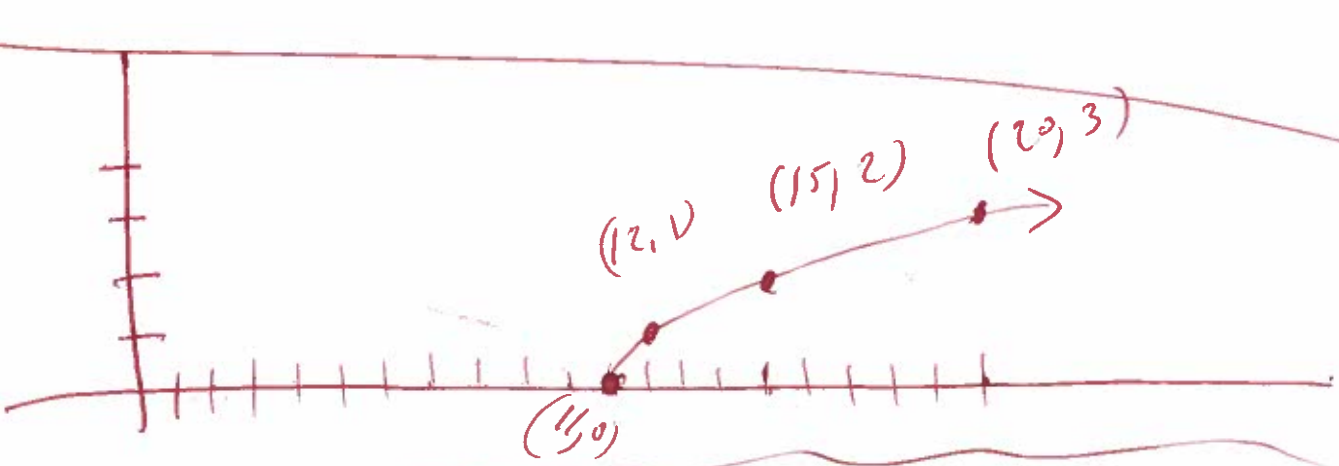
$f(12) = \sqrt{12-11} = \sqrt{1} = 1$

$f(15) = \sqrt{15-11} = \sqrt{4} = 2$

$f(20) = \sqrt{20-11} = \sqrt{9} = 3$

x	f(x)
11	0
12	1
15	2
20	3

OR



137. Use radical notation to write the expression. Simplify if possible.

$\left(\frac{81}{625}\right)^{\frac{1}{4}}$

$\left(\frac{3^4}{5^4}\right)^{\frac{1}{4}} = \frac{3^{\frac{4}{4}}}{5^{\frac{4}{4}}} = \frac{3^1}{5^1} = \frac{3}{5}$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

☐ A. $\left(\frac{81}{625}\right)^{\frac{1}{4}} =$ _____

(Simplify your answer. Type an exact answer, using radicals as needed.)

☐ B. The answer is not a real number.

Prime 2, 3, 5, 7, 11, 13 - 3(81) 5(625)
3(27) 5(125)
3(9) 5(25)
3(3) 5(5)
1 1
81 = 3^4 625 = 5^4

Answer: A. $\left(\frac{81}{625}\right)^{\frac{1}{4}} = \frac{3}{5}$

(Simplify your answer. Type an exact answer, using radicals as needed.)

138. Use radical notation to rewrite the expression. Simplify if possible.

$1024^{\frac{3}{5}} = (2^{10})^{\frac{3}{5}} = (2^{\frac{10}{5}})^{\frac{3}{1}} = 2^6 = 64$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

☐ A. $1024^{\frac{3}{5}} =$ _____

(Simplify your answer. Type an exact answer, using radicals as needed.)

☐ B. The answer is not a real number.

Answer: A. $1024^{\frac{3}{5}} = 64$

(Simplify your answer. Type an exact answer, using radicals as needed.)

139. Simplify by factoring.

$\sqrt{50}$

Answer: $5\sqrt{2}$

$\sqrt{25 \cdot 2} = \sqrt{25} \sqrt{2} = 5\sqrt{2}$

$\sqrt{50} =$ _____

(Type an exact answer, using radicals as needed.)

Prime 2, 3, 5, 7, 11, 13 - 2(50)
5(25)
5(5)
1

140. Simplify. Assume that the variables represent nonnegative real numbers.

$\sqrt{9a^2b^7}$

$\sqrt{9a^2b^7} =$ _____

Answer: $3ab^3\sqrt{b}$

$\sqrt{3^2 a^2 b^6 b^1} = 3^{\frac{2}{2}} a^{\frac{2}{2}} b^{\frac{6}{2}} \sqrt{b^1} = 3^1 a^1 b^3 \sqrt{b} = 3ab^3\sqrt{b}$

141. Solve.

$$\sqrt{x-9} = 4$$

$$\begin{aligned} (\sqrt{x-9})^2 &= (4)^2 \\ x-9 &= 16 \\ x-9+9 &= 16+9 \end{aligned}$$

$$\begin{aligned} \text{Check} \\ \sqrt{25-9} &= 4 \\ \sqrt{16} &= 4 \\ 4 &= 4 \end{aligned}$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ☐ A. The solution(s) is(are) $x =$ 25
(Use a comma to separate answers as needed.)
- ☐ B. The solution set is $\emptyset$.

Answer: A. The solution(s) is(are) $x =$ 25. (Use a comma to separate answers as needed.)

142. Solve.

$$\sqrt{x+8} = \sqrt{2x-1}$$

$$\begin{aligned} \rightarrow (\sqrt{x+8})^2 &= (\sqrt{2x-1})^2 \\ x+8 &= 2x-1 \\ x+8-8 &= 2x-1-8 \\ x &= 2x-9 \end{aligned}$$

$$\begin{aligned} -1x &= -9 \\ \frac{-1x}{-1} &= \frac{-9}{-1} \end{aligned}$$

Select the correct choice below and fill in any answer boxes present in your choice.

- ☐ A. $x =$ 9 (Simplify your answer. Use a comma to separate answers as needed.)
- ☐ B. There is no solution.

Answer: A. $x =$ 9 (Simplify your answer. Use a comma to separate answers as needed.)

143. Multiply.

$$(8+6i)(6+i)$$

$$(8+6i)(6+i) =$$

(Simplify your answer. Type your answer in the form $a+bi$.)

Answer: $42+44i$

$$\begin{aligned} (8+6i)(6+i) &= 48 + 8i + 36i + 6i^2 \\ &= 48 + 44i + 6i^2 \\ &= 48 + 44i + 6(-1) \\ &= 48 + 44i - 6 \\ &= 42 + 44i \end{aligned}$$

Formula $i^2 = -1$

144. Use the square root property to solve the equation. The equation has real number solutions.

$$(x+9)^2 = 16$$

$$x =$$

(Simplify your answer. Type an exact answer, using radicals as needed. Use a comma to separate answers as needed.)

Answer: $-5, -13$

$$\begin{aligned} \rightarrow \sqrt{(x+9)^2} &= \pm\sqrt{16} \\ x+9 &= \pm 4 \\ x+9 &= -4 \quad \text{or} \quad x+9 = 4 \\ x+9-9 &= -4-9 \quad \text{or} \quad x+9-9 = 4-9 \\ x &= -13 \quad \text{or} \quad x = -5 \end{aligned}$$

145. The area of a square room is 256 square feet. Find the dimensions of the room.

The side of the room is 16 feet long.

Answer: 16

$$\begin{aligned} x^2 &= 256 \\ \sqrt{x^2} &= \sqrt{256} \\ x &= 16 \end{aligned}$$



146. Evaluate $\sqrt{b^2 - 4ac}$ for $a = 2$, $b = 3$, and $c = -5$.

$\sqrt{b^2 - 4ac} = \boxed{}$

(Simplify your answer. Type an exact answer, using radicals as needed.)

Answer: 7

$$\sqrt{(3)^2 - 4(2)(-5)} =$$
$$\sqrt{9 + 40} =$$
$$\sqrt{49} =$$
$$7 =$$

147. Use the quadratic formula to solve the equation.

$m^2 + 3m + 2 = 0$

$a = 1, b = 3, c = 2$

$m = \boxed{}$

(Simplify your answer. Type an exact answer, using radicals as needed. Use a comma to separate answers as needed.)

formula

Answer: -2, -1

$$m = \frac{-3 \pm \sqrt{(3)^2 - 4(1)(2)}}{2(1)}$$
$$m = \frac{-3 \pm \sqrt{9 - 8}}{2}$$
$$m = \frac{-3 \pm \sqrt{1}}{2}$$
$$m = \frac{-3 \pm 1}{2}$$

$$m = \frac{-3 - 1}{2} \text{ OR } m = \frac{-3 + 1}{2}$$
$$m = -\frac{4}{2} \text{ OR } m = -\frac{2}{2}$$
$$m = -2 \text{ OR } m = -1$$

148. Use the quadratic formula to solve the equation.

$x^2 + 8x + 25 = 0$

$a = 1, b = 8, c = 25$

The solution(s) is/are $x = \boxed{}$.

(Simplify your answer. Type an exact answer, using radicals and i as needed. Use a comma to separate answers as needed.)

Answer: $-4 + 3i, -4 - 3i$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

formula

$$x = \frac{-(8) \pm \sqrt{(8)^2 - 4(1)(25)}}{2(1)}$$

$$x = \frac{-8 \pm \sqrt{64 - 100}}{2}$$

$$x = \frac{-8 \pm \sqrt{-36}}{2}$$

$$x = \frac{-8 \pm 6i}{2}$$

$$x = -\frac{8}{2} \pm \frac{6i}{2}$$

$$x = -4 \pm 3i$$

$$x = -4 - 3i$$

OR

$$x = -4 + 3i$$

149.

Sketch the graph of the quadratic function and the axis of symmetry. State the vertex, and give the equation for the axis of symmetry.

$$g(x) = (x + 3)^2 - 4$$

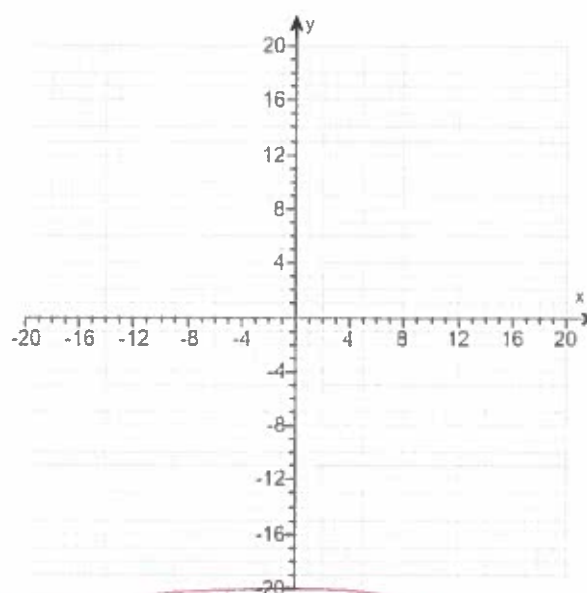
Use the graphing tool to graph the function as a solid curve and the axis of symmetry as a dashed line.

What is the vertex of the graph?

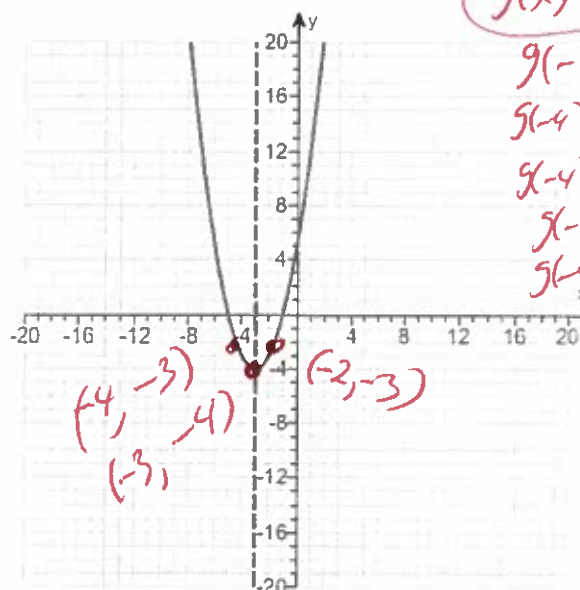
The vertex is
(Type an ordered pair.)

What is the equation for the axis of symmetry?

(Type an equation.)



Answers



$(-3, -4)$

$x = -3$

$$g(x) = (x+3)^2 - 4$$

$$g(-4) = (-4+3)^2 - 4$$

$$g(-4) = (-1)^2 - 4$$

$$g(-4) = (-1)(-1) - 4$$

$$g(-4) = 1 - 4$$

$$g(-4) = -3$$

x	g(x)
-4	-3
-3	-4
-2	-3

$$g(-3) = (-3+3)^2 - 4$$

$$g(-3) = (0)^2 - 4$$

$$g(-3) = (0)(0) - 4$$

$$g(-3) = 0 - 4$$

$$g(-3) = -4$$

$$g(-2) = (-2+3)^2 - 4$$

$$g(-2) = (1)^2 - 4$$

$$g(-2) = (1)(1) - 4$$

$$g(-2) = 1 - 4$$

$$g(-2) = -3$$

150.

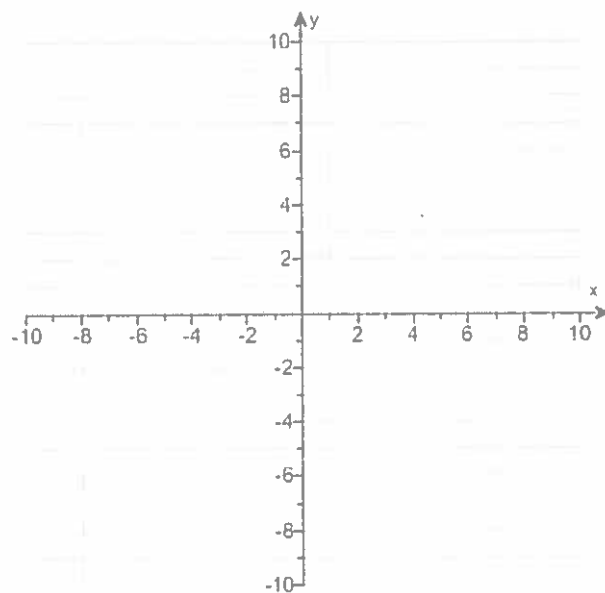
Sketch the graph of the quadratic function and the axis of symmetry. State the vertex, and give the equation for the axis of symmetry.

$$F(x) = -x^2 + 5$$

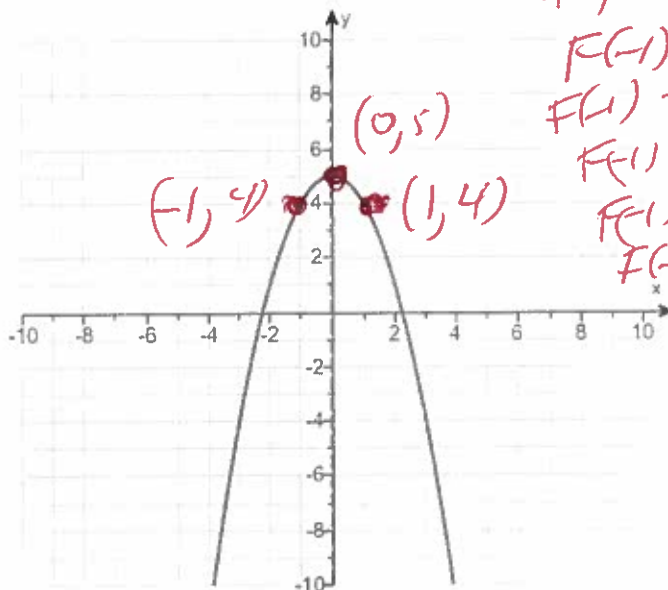
Use the graphing tool to graph the function as a solid curve and the axis of symmetry as a dashed line.

The vertex is .
(Type an ordered pair.)

The axis of symmetry is .
(Type an equation.)



Answers



(0,5)

$x = 0$

$$F(x) = -x^2 + 5$$

$$F(-1) = -(-1)^2 + 5$$

$$F(-1) = -(-1)(-1) + 5$$

$$F(-1) = -(1) + 5$$

$$F(-1) = -1 + 5$$

$$F(-1) = 4$$

x	F(x)
-1	4
0	5
1	4

$$F(0) = -(0)^2 + 5$$

$$F(0) = -(0)(0) + 5$$

$$F(0) = -(0) + 5$$

$$F(0) = 0 + 5$$

$$F(0) = 5$$

$$F(1) = -(1)^2 + 5$$

$$F(1) = -(1)(1) + 5$$

$$F(1) = -(1) + 5$$

$$F(1) = -1 + 5$$

$$= 4$$