Student:
Date:

1. Solve and check the solution.
$4(4 \mathrm{x}-3)=17 \mathrm{x}$
$\mathrm{x}=\square$
Answer: -12
2. Solve the equation.

$$
-2 y-9=4 y+9
$$

$y=$ $\qquad$

Answer: - 3
3. Solve the equation.

$$
\frac{x}{7}=\frac{x}{14}+\frac{1}{2}
$$

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

Answer: 7
4. Solve the following equation.

$$
-2.6 x+2.4=-10.6
$$

The solution is $\qquad$ . (Type an integer or a decimal.)

Answer: 5
5. Solve.

$$
3(x+2.55)=2 x
$$

$\mathrm{x}=$ $\qquad$ (Type an integer or a decimal.)

Answer: - 7.65
6. Solve.

$$
\begin{aligned}
& 4(2 x-1.4)=4 x-5.6 \\
x= & \text { (Type an integer or a decimal.) }
\end{aligned}
$$

Answer: 0
7. Find the total amount in the compound interest account.
$\$ 2700$ is compounded annually at a rate of $7 \%$ for 1 year.
\$ $\qquad$ (Round to the nearest cent.)

Answer: 2889.00
8. Find the total amount in the compound interest account.
$\$ 2000$ is compounded annually at a rate of $11 \%$ for 3 years.
\$ $\qquad$ (Round to the nearest cent.)

Answer: 2735.26
9. Solve the inequality. Graph the solution set and write it in interval notation.

$$
5 x<-20
$$

Choose the correct graph below.

B.

C.

D.
E.



The solution to the inequality $5 x<-20$ is $\qquad$ .
(Type your answer in interval notation.)

## Answers



$$
(-\infty,-4)
$$

10. Solve the inequality. Graph the solution set and write it in interval notation.
$-7 x \leq 28$
Choose the correct graph below.A. $\stackrel{+}{-8-7-6-5-4-3-2-1} 0$
B.
C.

D.
.
E.


O
F.


The solution to the inequality $-7 x \leq 28$ is $\qquad$ .
(Type your answer in interval notation.)

## Answers


$[-4, \infty)$
11. Solve the inequality.

$$
4 x-7<8 x+5
$$

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

Answer: (-3, $\infty$ )
12. Solve the inequality.

$$
-6 x+4 \geq 4(3-x)
$$

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

Answer: (- $\quad$, - 4]
13.

For the equation, find three ordered pair solutions by completing the table. Then use any two of the ordered pairs to graph the equation.

$$
x-y=3
$$

## Complete the table below.

| $\mathbf{x}$ |  | $\mathbf{y}$ |
| :---: | :---: | :---: |
|  |  | 0 |
| 1 |  | -1 |
|  |  |  |

Use the graphing tool to graph the equation.


Answers 3
$-2$
2

14.

For the following equation, find three ordered pair solutions by completing the table. Then use the ordered pairs to graph the equation.

$$
y=4 x
$$

Find three ordered pair solutions of the given equation.

| $x$ | $y$ |
| :---: | :---: |
| 0 |  |
| -1 |  |
| 1 |  |

Use the graphing tool to graph the line.


## Answers 0

$$
-4
$$

4

15.

For the equation, find three ordered pair solutions by completing the table. Then use any two of the ordered pairs to graph the equation.

$$
y=\frac{1}{4} x
$$

## Complete the table below.

| $\mathbf{x}$ | $\mathbf{y}$ |
| ---: | :--- |
| 0 |  |
| -8 |  |
| 8 |  |

Use the graphing tool to graph the equation.


Answers 0
$-2$
2

16.

For the following equation, find three ordered pair solutions by completing the table. Then use the ordered pairs to graph the equation.

$$
y=-2 x+7
$$

Find three ordered pair solutions of the given equation.

| $x$ | $y$ |
| :---: | :---: |
| 0 |  |
| 1 |  |
| 2 |  |

Use the graphing tool to graph the line.


Answers 7
5
3

17.

Graph the linear equation.
$x=5$

Use the graphing tool to graph the linear equation.


Answer:

18.

Graph the linear equation.

$$
y=6
$$

Use the graphing tool to graph the linear equation.


Answer:

19.

Graph the linear equation.

$$
x+3 y=-6
$$

Use the graphing tool to graph the equation.


Answer:

https://xlitemprod.pearsoncmg.com/api/v1/print/math
20.

Graph the linear equation.

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

Use the graphing tool to graph the linear equation.


Answer:

21.

Graph the linear equation.

$$
5 x-2 y=10
$$

Use the graphing tool to graph the linear equation.


Answer:

22.

Graph the linear equations $y=2 x$ and $y=2 x+4$ on the same set of axes. Discuss how the graphs are similar and how they are different.

Use the graphing tool to graph the linear equations.
How are the graphs similar and how are they different?A. Both graphs have the same tilt, and they cross the $y$-axis at the same point.B. Both graphs have different tilts, and they cross the $y$-axis at different points.C. Both graphs have the same tilt, but they cross the $y$-axis at different points.D. Both graphs have different tilts, but they cross the $y$-axis at the same point.


Answers

C. Both graphs have the same tilt, but they cross the $y$-axis at different points.
23. The graph of $y=3 x$ is given to the right. Match the equation $y=3 x+4$ with its graph below. Hint: Recall that if an equation is written in the form $y=m x+b$, its graph crosses the $y$-axis at $(0, b)$.



The equation $y=3 x+4$ corresponds to graph $\qquad$ . (Type a, b, c, or d.)

Answer: a
24. The graph of $y=6 x$ is given to the right. Match the equation $y=6 x-3$ with its graph below. Hint: Recall that if an equation is written in the form $y=m x+b$, its graph crosses the $y$-axis at $(0, b)$.


Choose the correct graph below.
○

B.
C.

$\bigcirc$
D.


Answer:

B.
25.

Identify the intercepts.


Identify all the x-intercepts.
$\overline{\text { (Type an ordered pair. Use a comma to separate answers }}$ as needed.)

Identify all the y-intercepts.
(Type an ordered pair. Use a comma to separate answers as needed.)

Answers $(5,0)$

$$
(0,-5)
$$

26. 

Graph the linear equation by finding and plotting its intercepts.

$$
x-y=-3
$$

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.


Answer:

27.

Graph the linear equation by finding and plotting its intercepts.

$$
-x+3 y=3
$$

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.


Answer:

28.

Plot the intercepts to graph the equation.

$$
7 x-2 y=14
$$

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.

Answer:

29.

Graph using the $x$ - and y-intercepts.

$$
y=4 x+4
$$

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

Answer:

30.

Graph the linear equation.
$x=-6$

Use the graphing tool to graph the linear equation.


Answer:

31.

Graph the linear equation.
$y=-2$

Use the graphing tool to graph the linear equation.


Answer:

32.

Graph the linear equation.

$$
x+3 y=-9
$$

Use the graphing tool to graph the linear equation.


Answer:

33. Match the equation with its graph.

$$
y=3
$$

Choose the correct graph below.
A.

B
C.

$\bigcirc$
D.


Answer:

C.
34. Match the equation with its graph.

$$
x=6
$$

Choose the correct graph below.
$\bigcirc \mathbf{A}$
A.

$\bigcirc$
B.C.


D


Answer:

A.
35. Find the slope of the line that goes through the given points.

$$
(-2,1) \text { and }(-3,5)
$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.A. The slope is $\qquad$ . (Type an integer or a simplified fraction.)B. The slope is undefined.

Answer: A. The slope is $\qquad$ $-4$ . (Type an integer or a simplified fraction.)
36. Find the slope of the line that goes through the given points.
$(-3,5)$ and $(-3,3)$
Select the correct choice below and, if necessary, fill in the answer box to complete your choice.A. The slope is $\qquad$ . (Type an integer or a fraction. Simplify your answer.)B. The slope is undefined.

Answer: B. The slope is undefined.
37. Find the slope of the line that goes through the given points.
$(3,7)$ and $(-8,-10)$
Select the correct choice below and, if necessary, fill in the answer box to complete your choice.
A. The slope is $\qquad$ . (Simplify your answer.)B. The slope is undefined.

Answer: A. The slope is 17 $\overline{11}$ (Simplify your answer.)
38. Find the slope of the line that goes through the given points.
$(2,7)$ and (-5,7)
Select the correct choice below and, if necessary, fill in the answer box to complete your choice.A. The slope is $\qquad$ . (Type an integer or a simplified fraction.)B. The slope is undefined.

Answer: A. The slope is $\qquad$ . (Type an integer or a simplified fraction.)
39.

Find the slope of the line if it exists.


Select the correct choice below and, if necessary, fill in the answer box to complete your choice.A. The slope is $\qquad$ .
(Simplify your answer. Type an integer or a fraction.)B. The slope is undefined.

Answer: A. The slope is $\quad-\frac{4}{5}$ .(Simplify your answer. Type an integer or a fraction.)
40.

Find the slope of the line if it exists.


Select the correct choice below and, if necessary, fill in the answer box to complete your choice.A. The slope is (Type an integer or a simplified fraction.)B. The slope is undefined.

Answer: B. The slope is undefined.
41.

For the graph on the right, determine if the slope is positive, negative, zero, or undefined.

Choose the correct slope.
A. PositiveB. NegativeC. ZeroD. Undefined

Answer: C. Zero
42. Solve the following equation for y .

$$
y-(-7)=2(x-6)
$$

$y=$ $\qquad$ (Simplify your answer.)

Answer: 2 x -19
43.

Use the slope-intercept form to graph the equation $y=-7 x+4$.

Use the graphing tool to graph the line. Use the slope and $y$-intercept when drawing the line.


Answer:

44.

Use the slope-intercept form to graph the equation $y=-\frac{3}{4} x-5$

Use the graphing tool to graph the line. Use the slope and $y$-intercept when drawing the line.


Answer:

45. Write an equation of the line with the given slope, $m$, and $y$-intercept $(0, b)$.

$$
m=9, b=8
$$

The equation is $\qquad$ .
(Simplify your answer. Type your answer in slope-intercept form. Use integers or fractions for any numbers in the equation.)

Answer: $y=9 x+8$
46. Write an equation of the line with the given slope, $m$, and $y$-intercept $(0, b)$.

$$
m=-8, b=-\frac{1}{5}
$$

The equation is $\qquad$ .
(Simplify your answer. Type your answer in slope-intercept form. Use integers or fractions for any numbers in the equation.)

Answer: $y=-8 x-\frac{1}{5}$
47. Find an equation of the line with the given slope that passes through the given point. Write the equation in the form $A x+B y=C$.

$$
m=-6,(-5,-7)
$$

The equation of the line in the form $A x+B y=C$ is $\qquad$ .
(Simplify your answer. Use integers or fractions for any numbers in the equation.)

Answer: $6 x+y=-37$
48. Find an equation of the line with the given slope that passes through the given point. Write the equation in the form $A x+B y=C$.

$$
m=\frac{3}{2},(7,-4)
$$

Choose the equation of the line in the form $A x+B y=C$.
A. $3 x+2 y=-29$B. $3 x-2 y=29$C. $3 x+2 y=29$D. $2 x-3 y=-29$

Answer: B. $3 x-2 y=29$
49. Find an equation of the line passing through the pair of points. Write the equation in the form $\mathrm{Ax}+\mathrm{By}=\mathrm{C}$.
$(4,6),(3,-9)$
Choose the equation of the line in the form $A x+B y=C$.A. $-x+y=54$B. $-15 x+y=-54$C. $x-15 y=54$D. $15 x+y=54$

Answer: B. $-15 x+y=-54$
50. Find the slope-intercept form of the line whose slope is 6 and that passes through the point $(-2,4)$.

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

Answer: $y=6 x+16$
51. Find the slope-intercept equation of the line that has the given characteristics.

Slope - 7 and y-intercept $(0,8)$
The equation is $\qquad$ _.
(Simplify your answer. Type your answer in slope-intercept form. Use integers or fractions for any numbers in the equation.)

Answer: $y=-7 x+8$
52. Find an equation of the line described below. Write the equation in slope-intercept form (solved for y ), when possible.

$$
\text { Slope }-\frac{6}{7}, \text { through }(-6,-1)
$$

What is the equation of the line?
A. $y=-\frac{6}{7} x-\frac{43}{7}$
B. $y=-\frac{6}{7} x-\frac{36}{7}$
C. $y=-\frac{6}{7} x+6$D. $y=-\frac{6}{7} x+\frac{43}{7}$E. $y=-\frac{6}{7} x+\frac{36}{7}$F. $y=-\frac{6}{7} x-6$
G. $y=-\frac{6}{7} x+1$H. $y=-\frac{6}{7} x-1$

Answer: $A . y=-\frac{6}{7} x-\frac{43}{7}$
53. Find the value of $x^{2}-4 x+1$ for the given value of $x$.

$$
x=-2
$$

The value of the polynomial for $x=-2$ is $\qquad$ (Simplify your answer.)

Answer: 13
54. Write an equation in standard form of the line that contains the point $(-1,3)$ and is
a. parallel to the line $y=5 x+6$
b. perpendicular to the line $y=5 x+6$
a. Which of the following equations, written in standard form, is parallel to the line $y=5 x+6$ and contains the point ( $-1,3$ )? Choose the correct answer below.A. $x+y=\frac{4}{5}$B. $5 x+y=8$C. $5 x-y=-8$D. $x-y=-\frac{4}{5}$
b. Which of the following equations, written in standard form, is perpendicular to the line $y=5 x+6$ and contains the point ( $-1,3$ )? Choose the correct answer below.A. $x+5 y=2$B. $x+5 y=14$C. $x-5 y=-2$D. $x-5 y=-14$

Answers C. $5 x-y=-8$
B. $x+5 y=14$
55. Given the following function, find $f(-3), f(0)$, and $f(3)$.

$$
f(x)=x+3
$$

$f(-3)=$ $\qquad$
$f(0)=$ $\qquad$
$f(3)=$ $\qquad$

Answers 0
3

6
56. Given the following function, find $f(-3), f(0)$, and $f(1)$.

$$
f(x)=x^{2}+5
$$

$f(-3)=$ $\qquad$
$f(0)=$ $\qquad$
$f(1)=$ $\qquad$

Answers 14
5
6
57. Given the function $f(x)=|x+9|$, find each of the following.
$f(8), f(-7), f(0)$
$f(8)=$ $\qquad$
(Simplify your answer. Type an integer or a fraction.)
$f(-7)=$
(Simplify your answer. Type an integer or a fraction.)
$f(0)=$ $\qquad$
(Simplify your answer. Type an integer or a fraction.)

Answers 17
2
9
58. Find $h(-2), h(0)$, and $h(4)$ for the following function.
$h(x)=3 x^{2}+2$
$h(-2)=$ $\qquad$ (Simplify your answer.)
$h(0)=$ $\qquad$ (Simplify your answer.)
$h(4)=$ $\qquad$ (Simplify your answer.)

Answers 14
2
50
59.

Find the domain and the range of the function graphed to the right.


The domain in interval notation is $\qquad$ .

The range in interval notation is $\qquad$ .

Answers (- $\infty, \infty$ )
$[5, \infty)$
60.

Find the domain and the range of the function graphed to the right.


The domain in interval notation is $\qquad$ .

The range in interval notation is $\qquad$ .

Answers (- $\infty, \infty$ )
$(-\infty, \infty)$
61.


Choose the correct domain.
$\bigcirc$
A. $\{7\}$B. $(-\infty, 7) \cup(7, \infty)$C. $(-\infty, \infty)$D. None of the above

Choose the correct range.A. $\{7\}$B. $(-\infty, 7) \cup(7, \infty)$C. $(-\infty, \infty)$D. None of the above

Answers A. \{7\}
C. $(-\infty, \infty)$
62.

Find the coordinates of the point of intersection.

The point of intersection is $\qquad$ -.
(Type an ordered pair.)


Answer: (-2,2)
63. Given the function $f(x)=-9 x+5$, find the indicated values.
(a) $f(3)$
(b) $f(r)$
(a) $f(3)=$ $\qquad$ (Simplify your answer.)
(b) $f(r)=$ $\qquad$ (Simplify your answer.)

Answers - 22
$-9 r+5$
64. Given the function $f(x)=x^{2}+10$, find the indicated values.
a) $f(10)$
b) $f(a)$
a) $f(10)=$ $\qquad$ (Simplify your answer.)
b) $f(a)=$ $\qquad$ (Simplify your answer.)

Answers 110

$$
a^{2}+10
$$

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

$$
\left\{\begin{array}{l}
x+y=7 \\
3 x+2 y=15
\end{array}\right.
$$

a. $(1,6)$
b. $(3,4)$
a. Is $(1,6)$ a solution?
$\bigcirc \mathrm{No}$
$\bigcirc$ Yes
b. Is $(3,4)$ a solution?


NoYes

Answers Yes

## No

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

$$
\left\{\begin{array}{l}
2 x+3 y=8 \\
3 x-3 y=-3
\end{array}\right.
$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.A. The solution is $\qquad$ . (Simplify your answer. Type an ordered pair.)B. There are infinitely many solutions; $\{(x, y) \mid 2 x+3 y=8\}$ or $\{(x, y) \mid 3 x-3 y=-3\}$.C. There is no solution; $\}$ or $\varnothing$.

Answer: A. The solution is $\qquad$ $(1,2)$ . (Simplify your answer. Type an ordered pair.)
67. Solve the system of equations by the addition method.

$$
\left\{\begin{array}{c}
x+4 y=-2 \\
2 x+5 y=-7
\end{array}\right.
$$

Select the correct choice below and, if necessary, fill in the answer box within your choice.A. The solution is $\qquad$ . (Simplify your answer. Type an ordered pair.)B. There are infinitely many solutions; $\{(x, y) \mid x+4 y=-2\}$ or $\{(x, y) \mid 2 x+5 y=-7\}$.C. There is no solution; $\}$ or $\varnothing$.

Answer: A. The solution is $\qquad$ $(-6,1)$ . (Simplify your answer. Type an ordered pair.)
68. The highest scorer of the women's basketball championship was Jessica Bradley. She scored 87 more points than Tina Harner, her teammate. Together, Bradley and Harner scored 1519 points. How many points did each player score during the championship?

Bradley scored $\qquad$ points, Harner scored $\qquad$ points.

Answers 803
716
69. Jen Butler has been pricing Speed-Pass train fares for a group trip to New York. Three adults and four children must pay $\$ 94$. Two adults and three children must pay $\$ 66$. Find the price of the adult's ticket and the price of a child's ticket.

The price of an adult's ticket is \$ $\qquad$ .

The price of a child's ticket is \$ $\qquad$ -.

Answers 18
10
70. Kevin and Randy Muise have a jar containing 66 coins, all of which are either quarters or nickels. The total value of the coins in the jar is $\$ 7.30$. How many of each type of coin do they have?

The jar contains $\qquad$ quarters.

The jar contains $\qquad$ nickels.

Answers 20
71. Find the following product.
$(5 a-5)\left(5 a^{2}+2 a-3\right)$
$(5 a-5)\left(5 a^{2}+2 a-3\right)=\square$

Answer: $25 a^{3}-15 a^{2}-25 a+15$
72. Simplify. Use positive exponents for any variables. Assume that all bases are not equal to 0 .
$\frac{p^{-2}}{q^{-4}}$
$\frac{p^{-2}}{q^{-4}}=$ $\qquad$ (Simplify your answer.)

Answer: $\frac{q^{4}}{p^{2}}$
73. Simplify. Use positive exponents for any variables. Assume that all bases are not equal to 0 .

$$
\frac{a^{-4}}{a^{-8}}
$$

$\frac{a^{-4}}{a^{-8}}=$ $\qquad$ (Use positive exponents only.)

Answer: $a^{4}$
74. Simplify the expression. Assume that all bases are not equal to 0 .

$$
\left(a^{-5} b^{3}\right)^{-7}
$$

$\left(a^{-5} b^{3}\right)^{-7}=$ $\qquad$ (Use positive exponents only.)

Answer: $\frac{a^{35}}{b^{21}}$
75. Simplify the expression. Write the result using positive exponents only. Assume that all bases are not equal to 0 .
$\frac{\left(a^{4} b^{-5}\right)^{-5}}{\left(2 a^{3} b^{-1}\right)^{-2}}$
$\frac{\left(a^{4} b^{-5}\right)^{-5}}{\left(2 a^{3} b^{-1}\right)^{-2}}=$

Answer: $\frac{4 b^{23}}{a^{14}}$
76. Divide using synthetic division.

$$
\begin{gathered}
\left(7 x^{2}+13 x+9\right) \div(x+1) \\
\left(7 x^{2}+13 x+9\right) \div(x+1)=\square
\end{gathered}
$$

Answer: $7 x+6+\frac{3}{x+1}$
77. Factor out the greatest common factor from the polynomial.
$2 x+28$
$2 x+28=$ $\qquad$ (Type your answer in factored form.)

Answer: 2(x+14)
78. Factor the four-term polynomial by grouping.

$$
x^{3}+2 x^{2}+9 x+18
$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.A. $x^{3}+2 x^{2}+9 x+18=$B. The polynomial is not factorable by grouping.

Answer: A. $x^{3}+2 x^{2}+9 x+18=(x+2)\left(x^{2}+9\right)$
79. Factor the four-term polynomial by grouping.

$$
4 x^{2}-16 x y-3 x+12 y
$$

Select the correct choice below and, if necessary, fill in the answer box within your choice.A. $4 x^{2}-16 x y-3 x+12 y=$
B. The polynomial is not factorable by grouping.

Answer: A. $4 x^{2}-16 x y-3 x+12 y=(4 x-3)(x-4 y)$
80. Factor.

$$
4 x y-6 x^{2}
$$

$4 x y-6 x^{2}=$ $\qquad$ (Factor completely.)

Answer: $2 x(2 y-3 x)$
81. Factor the following polynomial.
$-16 x^{6} y^{3}-28 x^{9} y^{2}$
$-16 x^{6} y^{3}-28 x^{9} y^{2}=$ $\qquad$ (Factor completely.)

Answer: $4 x^{6} y^{2}\left(-4 y-7 x^{3}\right)$
82. Factor the trinomial completely.

$$
x^{2}-16 x+63
$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.A. $x^{2}-16 x+63=$ $\qquad$ (Type your answer in factored form.)B. The polynomial is prime.

Answer: A. $x^{2}-16 x+63=(x-9)(x-7)$ (Type your answer in factored form.)
83. Factor the trinomial completely.

$$
x^{2}-5 x-36
$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.A. $x^{2}-5 x-36=$ $\qquad$ (Type your answer in factored form.)B. The polynomial is prime.

Answer: A. $x^{2}-5 x-36=(x+4)(x-9) \quad$ (Type your answer in factored form.)
84. Factor the trinomial completely.
$5 t-14+t^{2}$
Select the correct choice below and, if necessary, fill in the answer box to complete your choice.A. $5 t-14+t^{2}=$ $\qquad$ (Factor completely.)B. The polynomial is prime.

Answer: A. $5 t-14+t^{2}=(\mathbf{t} \mathbf{- 2 ) ( t + 7 )}$ (Factor completely.)
85. Factor the following binomial completely.

$$
49 x^{2}-121 y^{2}
$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.A. $49 x^{2}-121 y^{2}=$ $\qquad$ (Factor completely.)B. The polynomial is prime.

Answer: A. $49 x^{2}-121 y^{2}=\underline{(7 x+11 y)(7 x-11 y)}$ (Factor completely.)
86. Solve the equation.

$$
(x-1)(x+5)=0
$$

$\mathrm{x}=$ $\qquad$
(Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)

Answer: 1, - 5
87. Solve the equation.
$3 \mathrm{x}(\mathrm{x}-5)=0$
$x=$ $\qquad$ (Use a comma to separate answers as needed.)

Answer: 5,0
88. Solve the equation.

$$
(3 x+7)(2 x-5)=0
$$

x $=$ $\qquad$
(Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)
Answer: $-\frac{7}{3}, \frac{5}{2}$
89. Solve the equation.

$$
x^{2}-10 x+16=0
$$

x= $\qquad$
(Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)
Answer: 8,2
90. Solve.

$$
x^{2}+3 x-28=0
$$

$\mathrm{x}=$ $\qquad$
(Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)
Answer: - 7,4
91. Solve.

$$
x^{2}-x=0
$$

x= $\qquad$
(Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)
Answer: 0,1
92. Solve the equation.

$$
x^{2}-8 x=20
$$

x $=$ $\qquad$
(Use a comma to separate answers as needed.)
Answer: 10, - 2
93. Solve.

$$
(x-1)(x+6)=10 x
$$

$\mathrm{x}=$ $\qquad$
(Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)

Answer: - 1,6
94. Solve the equation.

$$
x^{3}-11 x^{2}+18 x=0
$$

$\mathrm{x}=$
(Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)

Answer: 0,2,9
95. Solve the equation.

$$
36 x^{3}-x=0
$$

$\mathrm{x}=$
(Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)
Answer: $0, \frac{1}{6},-\frac{1}{6}$
96. Solve.

$$
x^{2}-8=-2 x
$$

$\mathrm{x}=$
(Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)

Answer: - 4,2
97. Solve.

$$
9 x^{2}-8 x-1=0
$$

$\mathrm{x}=$
(Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)

Answer: $-\frac{1}{9}, 1$
98. Solve.

$$
x^{2}+14 x+49=0
$$

$\mathrm{x}=$ $\qquad$
(Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)

Answer: - 7
99. Find the $x$-intercepts of the graph of $y=(2 x+7)(x-9)$.

The x-intercepts are $\qquad$ .
(Simplify your answer. Type an ordered pair. Use a comma to separate answers as needed.)

Answer: $\left(-\frac{7}{2}, 0\right),(9,0)$
100. Find the $x$-intercepts of the graph of $y=x^{2}-4 x-45$.

The $x$-intercepts are $\qquad$ .
(Simplify your answer. Type an ordered pair. Use a comma to separate answers as needed.)

Answer: $(9,0),(-5,0)$
101. Choose the graph that matches the equation.

$$
y=(x+8)(x-7)
$$

A.

B.

C.

D.


Answer:

B.
102. Match the equation with its graph.

$$
y=x(x-1)
$$

Choose the correct graph below.
A.

B.
C.

D.


Answer:

C.
103. Write a quadratic equation that has two solutions, 6 and -5 .

Choose the correct answer below.A. $x(x-30)=0$
B. $-6 x(x+5)=0$C. $(x+6)(x+5)=0$D. $(x-6)(x+5)=0$E. $(x+6)(x-5)=0$F. $6 x(x-5)=0$

Answer: D. $(x-6)(x+5)=0$
104. Find the dimensions of a rectangle whose width is 7 miles less than its length, and whose area is 78 square miles.

The length of the rectangle is $\qquad$ miles.

The width of the rectangle is $\qquad$ miles.

Answers 13

6
105. Simplify the expression.

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

Select the correct choice below and fill in any answer boxes in your choice.A. $\frac{-2 x-2 y}{x+y}=$ $\qquad$ (Simplify your answer.)B. The expression cannot be simplified.

Answer: A. $\frac{-2 x-2 y}{x+y}=$ $\qquad$ (Simplify your answer.)
106. Find the product and simplify if possible.

$$
\frac{x}{11 x-77} \cdot \frac{x^{2}-7 x}{5}
$$

$\frac{x}{11 x-77} \cdot \frac{x^{2}-7 x}{5}=$ $\qquad$
(Simplify your answer. Use integers or fractions for any numbers in the expression.)

Answer: $x^{2}$

$$
\frac{x^{2}}{55}
$$

107. Find the quotient and simplify the result.
$\frac{14 x^{2}}{y^{9}} \div \frac{2 x^{2} y^{9}}{9}$
$\frac{14 x^{2}}{y^{9}} \div \frac{2 x^{2} y^{9}}{9}=$ $\qquad$ (Simplify your answer.)

Answer: $\frac{63}{y^{18}}$
108. Find the quotient and simplify.

$$
\frac{x^{2}+11 x+28}{x-5} \div \frac{x^{2}+x-12}{x-5}
$$

$\frac{x^{2}+11 x+28}{x-5} \div \frac{x^{2}+x-12}{x-5}=$ $\qquad$ (Type your answer in factored form.)

Answer: $\frac{x+7}{x-3}$
109. Add. Simplify the result if possible.

$$
\begin{gathered}
\frac{9}{5+y}+\frac{y+4}{5+y} \\
\frac{9}{5+y}+\frac{y+4}{5+y}=\square \quad \text { (Simplify your answer.) }
\end{gathered}
$$

Answer: $\frac{y+13}{5+y}$
110. Solve the equation.

$$
\frac{v-5}{2}=\frac{v}{7}
$$

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 7
(Type an integer or a simplified fraction. Use a comma to separate answers as needed.)
111.

Graph the linear equation.

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

Use the graphing tool to graph the linear equation.


Answer:

112. If $y$ varies directly as $x$, find the constant of variation $k$ and the direct variation equation for the situation.

$$
y=2 \text { when } x=4
$$

Find the constant of variation k .
$\mathrm{k}=$ $\qquad$ (Type an integer or a fraction. Simplify your answer.)

Complete the direct variation equation given $\mathrm{y}=2$ when $\mathrm{x}=4$.
$y=$ $\qquad$ (Use integers or fractions for any numbers in the expression.)

Answers | $\frac{1}{2}$ |
| ---: |
| $\frac{1}{2} x$ |

113. The amount $P$ of pollution varies directly with the population $N$ of people. City $A$ has a population of 442,000 and produces 260,000 tons of pollutants. Find how many tons of pollution we should expect City $B$ to produce, if we know that its population is 344,000 .

City B produces $\qquad$ tons of pollution.
(Do not round until the final answer. Then round to the nearest ton as needed.)

Answer: 202,353
114. Solve the absolute value equation.

$$
|2 x-1|=3
$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.A. The solution set is \{ $\}$.
(Type an integer or a simplified fraction. Use a comma to separate answers as needed.)B. The solution set is $\varnothing$.

Answer: A. The solution set is $\{2, \mathbf{2}\}$.
(Type an integer or a simplified fraction. Use a comma to separate answers as needed.)
115. Solve the inequality. Then graph the solution set.

$$
|x-3|<6
$$

Select the correct choice below and, if necessary, fill in the answer box within your choice.A. The solution is one or more intervals. The solution is $\qquad$ .
(Simplify your answer. Type your answer in interval notation. Use integers or fractions for any numbers in the expression.)B. There are only one or two solutions. The solution set is $\{\square$.
(Type an integer or a fraction. Use a comma to separate answers as needed.)C. There is no solution.

Choose the correct graph below.A.

B.
C.
$\bigcirc$ D
E.
$\bigcirc \mathbf{F}$.


Answers A. The solution is one or more intervals. The solution is $\qquad$ (-3,9)
(Simplify your answer. Type your answer in interval notation. Use integers or fractions for any numbers in the expression.)

116. Solve the inequality. Graph the solution set.

$$
|x+8| \geq 18
$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.A. The solution is one or more intervals. The solution is $\qquad$ .
(Type your answer in interval notation. Simplify your answer. Use integers or fractions for any numbers in the expression.)B. There are only one or two solutions. The solution set is \{ $\qquad$ \}. (Use a comma to separate answers as needed.)C. There is no solution.

Choose the correct graph below.

A

B.

C.

D.

E.

F.


Answers $A$. The solution is one or more intervals. The solution is $(-\infty, \mathbf{2 6}] \cup[10, \infty)$.
(Type your answer in interval notation. Simplify your answer. Use integers or fractions for any numbers in the expression.)

117.

Graph the inequality $x+y \geq 3$.

Use the graphing tool to graph the inequality.


Answer:

118. Determine whether $(1,1)$ is included in the graph.

$$
4 x+2 y<7
$$

Is $(1,1)$ included in the graph?YesNo

Answer: Yes
119. Simplify the radical. Assume that all variables represent positive real numbers.
$\sqrt{81 a^{4} b^{38}}$
Select the correct choice below and, if necessary, fill in the answer box to complete your choice.A. $\sqrt{81 a^{4} b^{38}}=$ $\qquad$B. The square root is not a real number.

Answer: A. $\sqrt{81 a^{4} b^{38}}=$ $\qquad$
120.

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

$$
f(x)=\sqrt{x-5}
$$

The domain of the function $f(x)$ is $\qquad$ .
(Type your answer in interval notation.)
Complete the table to the right.
Graph the function. Choose the correct graph to the right.

| $x$ | $f(x)$ |
| :---: | :---: |
| 5 |  |
| 6 |  |
| 14 |  |
| 21 |  |

A

C

B.

D.


Answers [5, $\infty$ )
0
1
3
4

D.
121. Use radical notation to write the expression. Simplify if possible. Assume that all variables represent nonnegative quantities.
$\left(49 x^{4}\right)^{\frac{1}{2}}$
Select the correct choice below and, if necessary, fill in the answer box to complete your choice.
A. $\left(49 x^{4}\right)^{\frac{1}{2}}=$ $\qquad$
(Simplify your answer. Type an exact answer, using radicals as needed.)B. The answer is not a real number.

Answer: A. $\left(49 x^{4}\right)^{\frac{1}{2}}=\quad 7 x^{2} \quad$ (Simplify your answer. Type an exact answer, using radicals as needed.)
122. Use radical notation to rewrite the expression. Simplify if possible.

$$
1024^{2 / 5}
$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.A. $1024^{2 / 5}=$
(Simplify your answer. Type an exact answer, using radicals as needed.)B. The answer is not a real number.

Answer: A. $1024^{2 / 5}=$ $\qquad$ (Simplify your answer. Type an exact answer, using radicals as needed.)
123.

Simplify by factoring.
$\sqrt{24}=$ $\qquad$
$\sqrt{24}$
(Type an exact answer, using radicals as needed.)

Answer: $2 \sqrt{6}$
124. Simplify. Assume that the variable represents a nonnegative real number.

$$
\sqrt{4 x^{7}}
$$

$\sqrt{4 x^{7}}=$ $\qquad$ (Type an exact answer, using radicals as needed.)

Answer: $2 x^{3} \sqrt{x}$
125. Simplify. Assume that the variables represent nonnegative real numbers.
$\sqrt{25 a^{6} b^{5}}$
$\sqrt{25 a^{6} b^{5}}=$ $\qquad$ (Type an exact answer, using radicals as needed.)

Answer: $5 a^{3} b^{2} \sqrt{b}$
126. Rationalize the denominator.

$$
\frac{\sqrt{14}-\sqrt{13}}{\sqrt{14}+\sqrt{13}}
$$

$\frac{\sqrt{14}-\sqrt{13}}{\sqrt{14}+\sqrt{13}}=$ $\qquad$ (Type an exact answer, using radicals as needed.)

Answer: $27-2 \sqrt{182}$
127. Rationalize the numerator.

$$
\frac{\sqrt{7}-2}{\sqrt{7}+2}
$$

$\frac{\sqrt{7}-2}{\sqrt{7}+2}=$ $\qquad$
(Type an exact answer, using radicals as needed.)

Answer:

$$
\frac{3}{11+4 \sqrt{7}}
$$

128. Solve.

$$
\sqrt{x-13}=5
$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.A. The solution(s) is(are) $x=$ (Use a comma to separate answers as needed.)
B. The solution set is $\varnothing$.

Answer: A. The solution(s) is(are) $\mathrm{x}=$ $\qquad$ . (Use a comma to separate answers as needed.)
129. Solve.

$$
\sqrt{x+2}=\sqrt{2 x-5}
$$

Select the correct choice below and fill in any answer boxes present in your choice.A. $\mathrm{x}=$ $\qquad$ (Simplify your answer. Use a comma to separate answers as needed.)B. There is no solution.

Answer: A. $x=$ $\qquad$ (Simplify your answer. Use a comma to separate answers as needed.)
130. Add.
$(5-4 i)+(2+3 i)$
$(5-4 i)+(2+3 i)=$ $\qquad$
(Simplify your answer. Type your answer in the form a +bi .)

Answer: 7 - i
131. Subtract.
$(8+4 i)-(9-3 i)$
$(8+4 i)-(9-3 i)=$ $\qquad$
(Simplify your answer. Type your answer in the form a + bi.)

Answer: $-1+7 i$
132. Multiply.
$(5+9 i)(9+i)$
$(5+9 i)(9+i)=$
(Simplify your answer. Type your answer in the form a + bi.)

Answer: $36+86 i$
133. Perform the indicated operation.
$\frac{7-6 i}{7+i}$
$\frac{7-6 i}{7+i}=$ $\qquad$
(Type your answer in the form a + bi. Use integers or fractions for any numbers in the expression.)

Answer: $\frac{43}{50}-\frac{49}{50} i$
134. Use the square root property to solve the equation. The equation has real number solutions.

$$
(x+6)^{2}=16
$$

$\mathrm{x}=$
(Simplify your answer. Type an exact answer, using radicals as needed. Use a comma to separate answers as needed.)

Answer: - 2, - 10
135. Solve the equation by completing the square. The equation has real number solutions.

$$
x^{2}+18 x=-32
$$

$\mathrm{x}=$
(Simplify your answer. Type an exact answer, using radicals as needed. Use a comma to separate answers as needed.)

Answer: - 2, - 16
136. Use the quadratic formula to solve the equation.

$$
m^{2}-4 m-21=0
$$

$\mathrm{m}=$ $\qquad$
(Simplify your answer. Type an exact answer, using radicals as needed. Use a comma to separate answers as needed.)

Answer: 7, - 3
137. Use the quadratic formula to solve the equation. The equation has real number solutions.

$$
4 y=3 y^{2}-7
$$

$y=$
(Type a simplified answer, using fractions and radicals as needed. Use a comma to separate answers as needed.)

Answer: $\frac{7}{3},-1$
138. Use the quadratic formula to solve the equation.

$$
x^{2}+4 x+8=0
$$

The solution(s) is/are $x=$ $\qquad$ .
(Simplify your answer. Type an exact answer, using radicals and $i$ as needed. Use a comma to separate answers as needed.)

```
Answer: - 2+2i,-2-2i
```

139. 

Sketch the graph of the quadratic function and the axis of symmetry. State the vertex, and give the equation for the axis of symmetry.
$h(x)=x^{2}+5$

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

The vertex is $\qquad$ .
(Type an ordered pair.)
The axis of symmetry is $\qquad$ .
(Type an equation.)


$x=0$
140.

Sketch the graph of the quadratic function and the axis of symmetry. State the vertex, and give the equation for the axis of symmetry.
$f(x)=(x-10)^{2}$

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

The vertex is $\qquad$ .
(Type an ordered pair.)
The axis of symmetry is $\qquad$ .
(Type an equation.)


$x=10$
141.

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

$$
f(x)=\frac{1}{4}(x-6)^{2}-5
$$

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 of the axis of symmetry?
(Type an equation.)



$$
\begin{equation*}
x=6 \tag{6,-5}
\end{equation*}
$$

142. 

Sketch the graph of the quadratic function and the axis of symmetry. State the vertex, and give the equation for the axis of symmetry.
$f(x)=-5(x-3)^{2}+1$

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

The vertex is $\qquad$ .
(Type an ordered pair.)
The axis of symmetry is $\qquad$ .
(Type an equation.) -

## (Type an equation.)



$(3,1)$
$x=3$
143. Find the vertex of the graph of the following quadratic function.

$$
f(x)=4 x^{2}+8 x+3
$$

The vertex is $\qquad$ .
(Type an ordered pair.)

Answer: (-1, - 1 )
144.

Find the vertex of the graph of the quadratic function. Determine whether the graph opens upward or downward, find any intercepts, and sketch the graph.

$$
f(x)=-x^{2}-4 x-3
$$

The vertex is $\qquad$ .
(Simplify your answer. Type an ordered pair.)
Does the graph open upward or downward?The parabola opens upward.
The parabola opens downward.

Find any $x$-intercepts of the graph.
Select the correct choice below and, if necessary, fill in the answer box to complete your choice.A. The x-intercept(s) is(are)
(Simplify your answer. Type an ordered pair. Use a comma to separate answers as needed.)
B. There is no x-intercept.

Find any y-intercepts of the graph.
Select the correct choice below and, if necessary, fill in the answer box to complete your choice.A. The y-intercept(s) is(are)
(Simplify your answer. Type an ordered pair. Use a comma to separate answers as needed.)
B. There is no $y$-intercept.

Use the graphing tool to graph the function.


## Answers (-2,1)

The parabola opens downward.
A. The x-intercept(s) is(are) (-3,0),(-1,0).
(Simplify your answer. Type an ordered pair. Use a comma to separate answers as needed.)
A. The y-intercept(s) is(are) $\quad(0,-3)$
(Simplify your answer. Type an ordered pair. Use a comma to separate answers as needed.)

145.

Find the vertex of the graph of the quadratic function. Determine whether the graph opens upward or downward, find any intercepts, and sketch the graph.
$f(x)=x^{2}-1$

The vertex of the quadratic function is the point $\qquad$ .
(Type your answer as an ordered pair.)
Does the graph open upward or downward?A. The parabola opens downward.B. The parabola opens upward.

Find any x-intercepts of the graph.
Select the correct choice below and, if necessary, fill in the answer box to complete your choice.A. The x-intercept(s) is(are)
(Simplify your answer. Type an ordered pair. Use a comma to separate answers as needed.)
B. There is no x-intercept.

Find any $y$-intercepts of the graph.
Select the correct choice below and, if necessary, fill in the answer box to complete your choice.A. The y-intercept(s) is(are)
(Simplify your answer. Type an ordered pair. Use a comma to separate answers as needed.)B. There is no $y$-intercept.

Use the graphing tool on the right to graph the parabola.


Answers (0, - 1 )
B. The parabola opens upward.
A. The x-intercept(s) is(are)
(-1,0),(1,0)
(Simplify your answer. Type an ordered pair. Use a comma to separate answers as needed.)
A. The y-intercept(s) is(are) (0, - $\mathbf{1}$ )
(Simplify your answer. Type an ordered pair. Use a comma to separate answers as needed.)

146.

Find the vertex of the graph of the quadratic function. Determine whether the graph opens upward or downward, find any intercepts, and sketch the graph.

$$
f(x)=-2 x^{2}-12 x
$$

The vertex is $\qquad$ .
(Simplify your answer. Type an ordered pair.)
Does the graph open upward or downward?A. The parabola opens downward.B. The parabola opens upward.

Find any $x$-intercepts of the graph.
Select the correct choice below and, if necessary, fill in the answer box to complete your choice.A. The $x$-intercept(s) is(are)
(Simplify your answer. Type an ordered pair. Use a comma to separate answers as needed.)
B. There is no x-intercept.

Find any y-intercepts of the graph.
Select the correct choice below and, if necessary, fill in the answer box to complete your choice.A. The y-intercept(s) is(are)
(Simplify your answer. Type an ordered pair. Use a comma to separate answers as needed.)
B. There is no y-intercept.

Use the graphing tool to graph the equation.

A. The parabola opens downward.
A. The $x$-intercept(s) is(are) (0,0),(-6,0)
(Simplify your answer. Type an ordered pair. Use a comma to separate answers as needed.)
A. The y-intercept(s) is(are) $\quad(0,0)$
(Simplify your answer. Type an ordered pair. Use a comma to separate answers as needed.)

147.

Find the vertex of the graph of the quadratic function. Determine whether the graph opens upward or downward, find any intercepts, and sketch the graph.
$f(x)=x^{2}-4 x-12$

The vertex is $\qquad$ -.
(Simplify your answer. Type an ordered pair. Use integers or fractions for any numbers in the expression.)

Does the graph open upward or downward?A. The parabola opens upward.B. The parabola opens downward.

Find any $x$-intercepts of the graph.
Select the correct choice below and, if necessary, fill in the answer box to complete your choice.A. The $x$-intercept(s) is(are)
(Simplify your answer. Type an ordered pair. Use a comma to separate answers as needed.)
B. There is no x-intercept.

Find any y-intercepts of the graph.
Select the correct choice below and, if necessary, fill in the answer box to complete your choice.A. The y-intercept(s) is(are)
(Simplify your answer. Type an ordered pair. Use a comma to separate answers as needed.)
B. There is no y-intercept.

Use the graphing tool to graph the equation.

## .

```
an ordered
```



## Answers (2, - 16)

A. The parabola opens upward.
A. The x-intercept(s) is(are) (6,0),(-2,0)
(Simplify your answer. Type an ordered pair. Use a comma to separate answers as needed.)
A. The y-intercept(s) is(are)
(Simplify your answer. Type an ordered pair. Use a comma to separate answers as needed.)

148.

Graph the equation on paper, and then choose the correct graph.
$y=2^{x}$

Choose the correct graph on the right.
A.

C.


B
B.

D.


Answer:

D.
149. Write the first five terms of each sequence whose general term is given.

$$
a_{n}=5 n+4
$$

$a_{1}=$ $\qquad$ (Simplify your answer.Type an integer or fraction.)
$a_{2}=$ $\qquad$ (Simplify your answer.Type an integer or fraction.)
$a_{3}=$ $\qquad$ (Simplify your answer.Type an integer or fraction.)
$a_{4}=$ $\qquad$ (Simplify your answer.Type an integer or fraction.)
$a_{5}=$ $\qquad$ (Simplify your answer.Type an integer or fraction.)

Answers 9

