MATH0320-031

d001160

1. $10x^4y^5 - 6x^5y^4$ Factor
2. $xy - 2x - 4y + 8$ Factor
3. $x^2 + 6x + 9$ Factor
4. $12 - 8x + x^2$ Factor
5. $25x^2 - 9y^2$ Factor
6. $\frac{10x}{10x - 20}$ simplify
7. $\frac{-100x - 100y}{x + y}$ Simplify
8. $\frac{x^2 - 4}{15x^8} \cdot \frac{5x^9}{x - 2}$ Simplify
9. $f(x) = x^2 - 2x + 1$, $f(-8)$ Evaluate
10. $|x + 2| = 6$ Solve
11. $|x - 2| < 8$ Solve
12. $|x - 3| > 8$ Solve
13. $\sqrt{72x^9}$ simplify
14. $\sqrt{x^{80}y^{20}}$ Simplify
15. $\sqrt[3]{125x^{12}y^{37}}$ Simplify
16. $4^{7/2}$ Evaluate
17. $(2 + 5i) - (8 - 3i)$ Evaluate
18. $(2 + 3i)(-2 - 5i)$ Evaluate
19. $10 \leq 2x + 4 < 16$ Solve
20. $\sqrt{x - 2} = 5$ Solve
21. $(x - 3)^2 = 25$ Solve
22. $(x - 3)(x + 6) = 0$ Solve
23. $x(x - 20) = 0$ Solve
24. $x^2 - 8x + 12 = 0$ Solve
25. $6x^2 + 19x + 10 = 0$ Solve
26. $x^2 + 2x + 5 = 0$ Solve
27. $x^2 + 6x + 9 = 0$ Solve
28. $x^2 + 2x + 1 = 7$ Solve
29. graph $y = 2x - 4$
30. graph $y = x^2 - 4$
31. graph $y = x^2 - 6x + 8$

1.

✓ ✓ ✓ ✓ ✓ ✓

1. Factor

$10x^4y^5 - 6x^5y^4 =$

$2x^4y^4(5y - 3x) =$

2.

2. Factor (group)

$xy - 2x - 4y + 8 =$

$(xy - 2x) + (-4y + 8) =$

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

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

3. Factor

$x^2 + 6x + 9 =$

9·1
3,3

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

4. Factor

$12 - 8x + x^2 =$

$x^2 - 8x + 12 =$

12·1
6·2
3,4

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

5. Factor

$25x^2 - 9y^2 =$

$(5x)^2 - (3y)^2 =$

$(5x + 3y)(5x - 3y) =$

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

6. Simplify

$\frac{10x}{10x - 20} =$

$\frac{10(x)}{10(x - 2)} =$

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

7. Simplify

$$\frac{-100x-100y}{x+y} =$$

$$\frac{-100(x+y)}{(x+y)} =$$

$$-100 =$$

3.

8. Simplify

$$\frac{x^2-4}{15x^8} \cdot \frac{5x^9}{x-2} =$$

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

$$\frac{(x)^2-(2)^2}{15x^8} \cdot \frac{5x^9}{x-2} =$$

$$\frac{(x+2)(x-2)}{15x^8} \cdot \frac{5x^9}{(x-2)} =$$

$$\frac{(x+2)5x^9}{15x^8} =$$

$$\frac{(x+2)x^1}{3} =$$

9. $f(x)=x^2-2x+1$ find $f(-8)$

$f(-8)=(-8)^2-2(-8)+1$

$f(-8)=(-8)(-8)-2(-8)+1$

$f(-8)=64+16+1$

$f(-8)=80+1$

$f(-8)=81$

10. Solve $|x+2| = 6$

$|x| = a$
$x = -a$ or $x = a$

Let $x+2 = -6$ OR $x+2 = 6$

$x+2-2 = -6-2$ OR $x+2-2 = 6-2$

$x = -8$ OR $x = 4$

11. Solve $|x-2| < 8$

$|x| < a$
$-a < x < a$

$-8 < x-2 < 8$

$-8+2 < x-2+2 < 8+2$

$-6 < x < 10$

$(-6, 10)$

12. Solve $|x-3| > 8$

$|x| > a$
$x < -a$ OR $x > a$

Let $x-3 < -8$ OR $x-3 > 8$

$x-3+3 < -8+3$ OR $x-3+3 > 8+3$

$x < -5$ OR $x > 11$

$(-\infty, -5) \cup (11, \infty)$

13. Simplify $\sqrt{72x^9} =$

$\sqrt{36 \cdot 2 \cdot x^8 \cdot x^1} =$

$6x^4\sqrt{2x} =$

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

2 | 72
2 | 36
2 | 18
3 | 9
3 | 3
1

14. Simplify $\sqrt[4]{x^{80}y^{20}} =$

$x^{40}y^{10} =$

15. simplify

$\sqrt[3]{125x^{12}y^{37}} =$

$\sqrt[3]{5^3 x^{12} y^{36} y^1} =$

$5x^4y^{12}\sqrt[3]{y} =$

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

5 | 125
5 | 25
5 | 5
1

5.

16. Evaluate

$4^{7/2} =$

$(2^2)^{7/2} =$

$2^{\frac{2(7)}{2}} =$

$2^7 =$

$2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 =$

$128 =$

17. Evaluate

$(2+5i) - (8-3i) =$

$2+5i-8+3i =$

$-6+8i =$

18. Evaluate

$(2+3i)(-2-5i) =$

$-4-10i-6i-15i^2 =$

$-4-10i-6i-15(-1) =$

$-4-10i-6i+15 =$

$11-16i =$

Formula

$i^2 = -1$

19. Solve

$10 < 2x + 4 < 16$

$10 - 4 < 2x + 4 - 4 < 16 - 4$

$6 < 2x < 12$

$\frac{6}{2} < \frac{2x}{2} < \frac{12}{2}$

$3 < x < 6$

6.

$(3, 6)$

20. Solve

$\sqrt{x-2} = 5$

$(\sqrt{x-2})^2 = (5)^2$

$x - 2 = 25$

$x - 2 + 2 = 25 + 2$

$x = 27$

21. Solve

$(x-3)^2 = 25$

$\sqrt{(x-3)^2} = \pm\sqrt{25}$

$x - 3 = \pm 5$

Let $x - 3 = -5$ OR $x - 3 = 5$

$x - 3 + 3 = -5 + 3$ OR $x - 3 + 3 = 5 + 3$

$x = -2$ OR $x = 8$

22. Solve

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

Let $x - 3 = 0$ OR $x + 6 = 0$

$x - 3 + 3 = 0 + 3$ OR $x + 6 - 6 = 0 - 6$

$x = 3$ OR $x = -6$

23. Solve

$X(X-20)=0$

Set $X=0$ OR $X-20=0$

$X=0$ OR $X-20+20=0+20$

$X=20$

24. Solve

$X^2-8X+12=0$

12·1
6·2
3·4

$(X-2)(X-6)=0$

Set $X-2=0$ OR $X-6=0$

$X-2+2=0+2$ OR $X-6+6=0+6$

$X=2$ OR $X=6$

25. Solve

$6X^2+19X+10=0$

6·1
2·3

10·1
2·5

$(2X+5)(3X+2)=0$

Set $2X+5=0$ OR $3X+2=0$

$2X+5-5=0-5$ OR $3X+2-2=0-2$

$2X=-5$ OR $3X=-2$

$\frac{2X}{2}=\frac{-5}{2}$ OR $\frac{3X}{3}=\frac{-2}{3}$

$X=-5/2$ OR $X=-2/3$

26. Solve USE Quadratic formula

$X^2+2X+5=0$

$a=1,\ b=2,\ c=5$

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

$X=\frac{-(2)\pm\sqrt{(2)^2-4(1)(5)}}{2(1)}$

$X=\frac{-2\pm\sqrt{4-20}}{2}$

$X=\frac{-2\pm\sqrt{-16}}{2}$

formula

$\sqrt{-1}=i$

$X=\frac{-2\pm 4i}{2}$

$X=-1\pm 2i$

$X=-1-2i$ OR $X=-1+2i$

(27) Solve

$x^2+6x+9=0$

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

Let $x+3=0$ or $x+3=0$

$x+3-3=0-3$ or $x+3-3=0-3$

$x=-3$ or $x=-3$

9.1
3.3

8.

(28) Solve use Quadratic form

$x^2+2x+1=7$

$x^2+2x+1-7=7-7$

$x^2+2x-6=0$

$a=1,\ b=2,\ c=-6$

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

$$x=\frac{-(2)\pm\sqrt{(2)^2-4(1)(-6)}}{2(1)}$$

$$x=\frac{-2\pm\sqrt{4+24}}{2}$$

$$x=\frac{-2\pm\sqrt{28}}{2}$$

$$x=\frac{-2\pm\sqrt{4*7}}{2}$$

$$x=\frac{-2\pm\sqrt{4}\sqrt{7}}{2}$$

$$x=\frac{-2\pm2\sqrt{7}}{2}$$

$$x=-1\pm1\sqrt{7}$$

$$x=-1\pm\sqrt{7}$$

$x=-1-\sqrt{7}$ or $x=-1+\sqrt{7}$

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

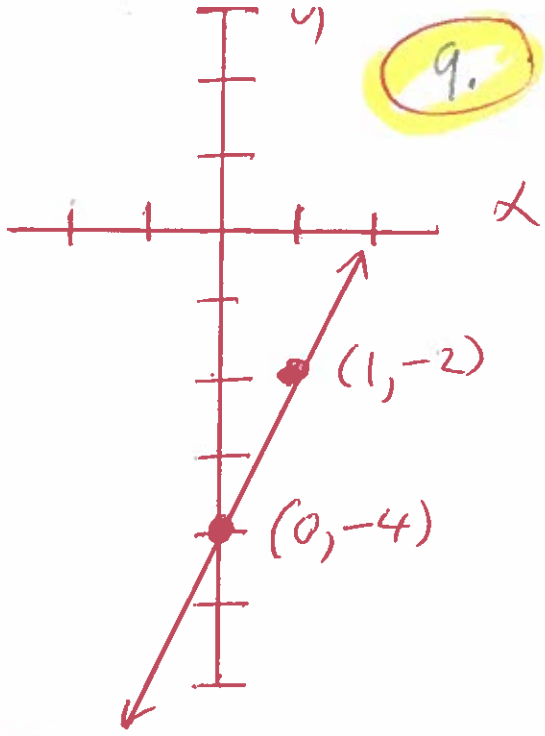
$28 = 2\cdot2\cdot7\cdot1$

29. Graph $y = 2x - 4$

x	y
0	-4
1	-2

$y = 2(0) - 4$
$y = 0 - 4$
$y = -4$

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



9.

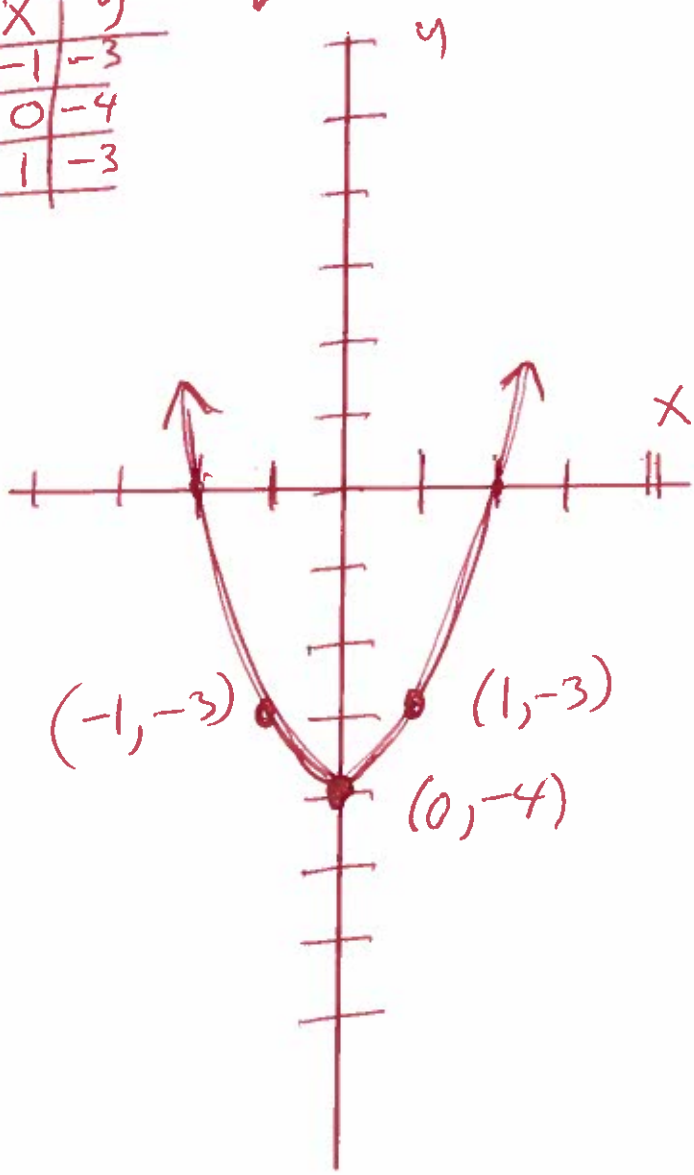
30. Graph $y = x^2 - 4$

x	y
-1	-3
0	-4
1	-3

$y = (-1)^2 - 4$
$y = (-1)(-1) - 4$
$y = 1 - 4$
$y = -3$

$y = (0)^2 - 4$
$y = (0)(0) - 4$
$y = 0 - 4$
$y = -4$

$y = (1)^2 - 4$
$y = (1)(1) - 4$
$y = 1 - 4$
$y = -3$



31, graph $y = x^2 - 6x + 8$

10.

x	y
2	0
3	-1
4	0

$y = (2)^2 - 6(2) + 8$
$y = (2)(2) - 6(2) + 8$
$y = 4 - 12 + 8$
$y = -8 + 8$
$y = 0$

$y = (3)^2 - 6(3) + 8$
$y = (3)(3) - 6(3) + 8$
$y = 9 - 18 + 8$
$y = -9 + 8$
$y = -1$

$y = (4)^2 - 6(4) + 8$
$y = (4)(4) - 6(4) + 8$
$y = 16 - 24 + 8$
$y = -8 + 8$
$y = 0$