

- www
Math032031
050619
1.
1. $6x-36$ factor
 2. $x^2+6x-27$ factor
 3. $x^2-2x-24$ factor
 4. $3x^2+2x-16$ factor
 5. $64x^2-169y^2$ factor
 6. $-2x-x^2+15$ factor
 7. $10x^3-110x^2+100x$ factor
 8. $x^2-6x-27=0$ solve
 9. $p+u=53$
 $2p+3u=156$
 10. $2p+2u=106$
 $3p-2u=-91$
 11. $\sqrt{150}$
 12. $4^{\frac{7}{2}}$
 13. $\sqrt{16x^{10}y^{44}}$
 14. $f(x)=x^2+2x+1$ find $f(-11)$
 15. $\frac{x^2-9}{x^2+11x+24} \cdot \frac{x+3}{x-3}$
 16. $\frac{x^2-4}{x^2-9} \div \frac{x-2}{x-3}$
 17. $\frac{-100x-100y}{x+y}$
 18. $\frac{10}{3+y} + \frac{2y+1}{3+y}$
 19. $|2x-4|=8$
 20. $|2x-4|<8$
 21. $|2x-4|>8$
 22. $(4+7i)(-2-11i)$
 23. $\frac{4+7i}{-2-11i}$
 24. $\sqrt{x-3}=10$
 25. $(x+2)^2=9$
 26. graph $y=-2x+8$
 27. graph $y=x^2-4$
 28. use Quadratic formula
 $x^2+2x+10=0$
 29. use Quadratic formula
 $3x^2+2x-16=0$
 30. $(2+7i)+(-3-11i)$
 31. $(-3-7i)-(-4+2i)$

1) factor

$$6x - 36 =$$

$$6(x - 6)$$

2

2) factor

$$x^2 + 6x - 27 =$$

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

$$\begin{array}{l} 27 \cdot 1 \\ 3 \cdot 9 \end{array}$$

Possible

factor

$$x^2 - 2x - 24 =$$

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

$$\begin{array}{l} 24 \cdot 1 \\ 12 \cdot 2 \\ \hline 6 \cdot 4 \\ 3 \cdot 8 \end{array}$$

Possible

3

factor

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

$$(3x + 8)(x - 2) =$$

$$\begin{array}{l} 3 \cdot 1 \end{array}$$

$$\begin{array}{l} 16 \cdot 1 \\ \hline 2 \cdot 8 \\ 4 \cdot 4 \end{array}$$

Possible

4

ck

$$(3x + 8)(x - 2) =$$

$$3x^2 - 6x + 8x - 16 =$$

$$3x^2 + 2x - 16 = \checkmark$$

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

$$64x^2 - 169y^2 =$$

$$(8x)^2 - (13y)^2 =$$

$$(8x + 13y)(8x - 13y)$$

34

6) factor

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

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

$$-1(x^2 + 2x - 15) =$$

$$-1(x - 3)(x + 5) =$$

possibly

15.1
3.5

7) factor

$$10x^3 - 110x^2 + 100x =$$

$$10x(x^2 - 11x + 10) =$$

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

possibly

10.1
2.5

8) SOLVE

$$x^2 - 6x - 27 = 0$$

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

Set $x + 3 = 0$ OR $x - 9 = 0$

$$x + 3 - 3 = 0 - 3$$
 OR $x - 9 + 9 = 0 + 9$

$$x = -3$$
 OR $x = 9$

possibly

27.1
3.9

9) $P + U = 53$

$$2P + 3U = 156$$

$$\left(\begin{array}{l} P + U = 53 \\ 2P + 3U = 156 \end{array} \right) \begin{pmatrix} -3 \\ 1 \end{pmatrix} \text{multi}$$

$$-3P - 3U = -159$$

$$2P + 3U = 156$$

$$-1P = -3$$

$$\frac{-1P}{-1} = \frac{-3}{-1}$$

$$P = 3$$

Subst

$$P + U = 53$$

$$(3) + U = 53$$

$$3 + U = 53$$

$$3 + U - 3 = 53 - 3$$

$$U = 50$$

$$(P, U) = (3, 50)$$

10.

$$2P + 2U = 106$$

$$3P - 2U = -91$$

$$5P = 15$$

$$\frac{5P}{5} = \frac{15}{5}$$

$$P = 3$$

Subst

$$2P + 2U = 106$$

$$2(3) + 2U = 106$$

$$6 + 2U = 106$$

$$6 + 2U - 6 = 106 - 6$$

$$2U = 100$$

$$\frac{2U}{2} = \frac{100}{2}$$

$$U = 50$$

$$(P, U) = (3, 50)$$

11 $\sqrt{150}$ Primes 2, 3, 5, 7, ...

$$\sqrt{25 \cdot 6} =$$

$$\sqrt{25} \sqrt{6} =$$

$$5\sqrt{6} =$$

$$\begin{array}{r} 2 \overline{)150} \\ 3 \overline{)75} \\ 5 \overline{)25} \\ 5 \overline{)5} \\ \hline 1 \end{array}$$

5

12. $4^{7/2} =$

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

$$(2^{2/1})^{7/2} =$$

$$2^{14/2} =$$

$$2^7 =$$

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

$$128 =$$

13. $\sqrt{16x^{10}y^{44}} =$

$$\sqrt[2]{16x^{10}y^{44}} =$$

$$4x^5y^{22} =$$

simple powers

14. $f(x) = x^2 + 2x + 1$ find $f(-11)$

6

$$f(-11) = (-11)^2 + 2(-11) + 1$$

$$f(-11) = (-11)(-11) + 2(-11) + 1$$

$$f(-11) = 121 - 22 + 1$$

$$f(-11) = 99 + 1$$

$$f(-11) = 100$$

15. $x^2 - 9$

$$\frac{x^2 - 9}{x^2 + 11x + 24} \cdot \frac{x+3}{x-3} =$$

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

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

$$\frac{\cancel{(x+3)}(x-3)}{\cancel{(x+3)}(x+8)} \cdot \frac{(x+3)}{\cancel{(x-3)}} =$$

$$\frac{(x+3)}{(x+8)} =$$

$$\frac{x+3}{x+8} =$$

16. $\frac{x^2 - 4}{x^2 - 9} \div \frac{x-2}{x-3} =$

$$\frac{x^2 - 4}{x^2 - 9} \cdot \frac{x-3}{x-2} =$$

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

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

$$\textcircled{17.} \quad \frac{-100x - 100y}{x+y} =$$

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

$$\textcircled{-100 =}$$

1

$$\textcircled{18.} \quad \frac{10}{3+y} + \frac{2y+1}{3+y} =$$
$$\frac{(10) + (2y+1)}{3+y} =$$

$$\frac{10 + 2y + 1}{3+y} =$$

$$\textcircled{\frac{11+2y}{3+y} =}$$

$$\textcircled{19.} \quad |2x - 4| = 8$$

$$\text{at } 2x - 4 = -8 \text{ OR } 2x - 4 = 8$$

$$2x - 4 + 4 = -8 + 4 \text{ OR } 2x - 4 + 4 = 8 + 4$$

$$2x = -4 \quad \text{OR} \quad 2x = 12$$

$$\frac{2x}{2} = \frac{-4}{2} \quad \text{OR} \quad \frac{2x}{2} = \frac{12}{2}$$

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

OR

$$\textcircled{x = 6}$$

formula

$$|x| = a$$

$$x = -a \text{ OR } x = a$$

$\{-2, 6\}$

$$\textcircled{20.} \quad |2x-4| < 8$$

$$-8 < 2x-4 < 8$$

$$-8+4 < 2x-4+4 < 8+4$$

$$-4 < 2x < 12$$

$$\frac{-4}{2} < \frac{2x}{2} < \frac{12}{2}$$

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

$$\text{formula} \quad |x| < a$$

$$-a < x < a$$



$$\textcircled{(-2, 6)}$$

$$\textcircled{21.} \quad |2x-4| > 8$$

$$2x-4 < -8 \quad \text{OR} \quad 2x-4 > 8$$

$$2x-4+4 < -8+4 \quad \text{OR} \quad 2x-4+4 > 8+4$$

$$2x < -4 \quad \text{OR} \quad 2x > 12$$

$$\frac{2x}{2} < \frac{-4}{2} \quad \text{OR} \quad \frac{2x}{2} > \frac{12}{2}$$

$$\textcircled{x < -2} \quad \text{OR} \quad \textcircled{x > 6}$$

$$\text{formula} \quad |x| > a$$

$$x < -a \quad \text{OR} \quad x > a$$



$$\textcircled{(-\infty, -2) \cup (6, \infty)}$$

$$\begin{aligned}
 22. \quad & (4+7i)(-2-11i) = \\
 & -8 - 44i - 14i - 77i^2 = \\
 & -8 - 58i - 77i^2 = \\
 & -8 - 58i - 77(-1) = \\
 & -8 - 58i + 77 = \\
 & \boxed{69 - 58i}
 \end{aligned}$$

9
formeln

$$a^2 - b^2 = -1$$

form
a+bi

$$\begin{aligned}
 23. \quad & \frac{4+7i}{-2-11i} = \\
 & \left(\frac{4+7i}{-2-11i} \right) \left(\frac{-2+11i}{-2+11i} \right) = \\
 & \frac{-8 + 44i - 14i + 77i^2}{4 - 22i + 22i - 121i^2} = \\
 & \frac{-8 + 30i + 77i^2}{4 - 121i^2} = \\
 & \frac{-8 + 30i + 77(-1)}{4 - 121(-1)} = \\
 & \frac{-8 + 30i - 77}{4 + 121} = \\
 & \frac{-85 + 30i}{125}
 \end{aligned}$$

mult

$$\frac{-85}{125} + \frac{30}{125}i$$

a+bi
form

$$24. \sqrt{x-3} = 10$$

$$(\sqrt{x-3})^2 = (10)^2$$

$$x-3 = 100$$

$$x-3+3 = 100+3$$

$$x = 103$$

10

{103}

$$25. (x+2)^2 = 9$$

$$\sqrt{(x+2)^2} = \pm\sqrt{9}$$

$$x+2 = \pm 3$$

$$x+2 = -3 \quad \text{OR}$$

$$x+2 = 3$$

$$x+x-x = -3-2 \quad \text{OR}$$

$$x+x-x = 3-2$$

$$x = -5$$

OR

$$x = 1$$

{-5, 1}

26 graph

$$y = -2x + 8$$

$$y = -2(0) + 8$$

$$y = 0 + 8$$

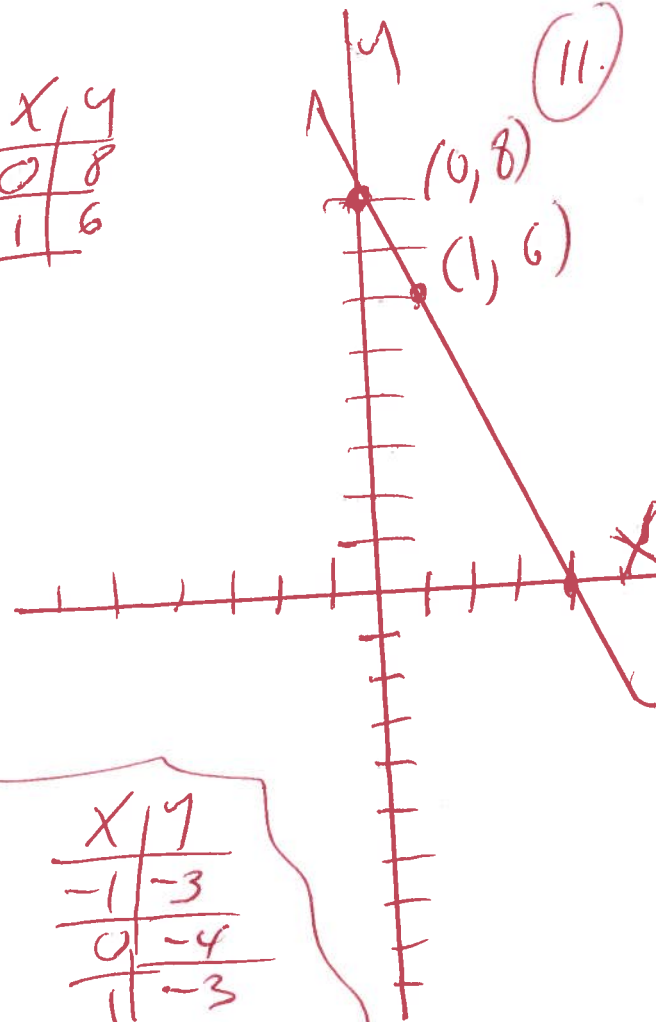
$$y = 8$$

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

$$y = -2 + 8$$

$$y = 6$$

x	y
0	8
1	6



27 graph

$$y = x^2 - 4$$

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

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

$$y = 1 - 4$$

$$y = -3$$

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

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

$$y = 0 - 4$$

$$y = -4$$

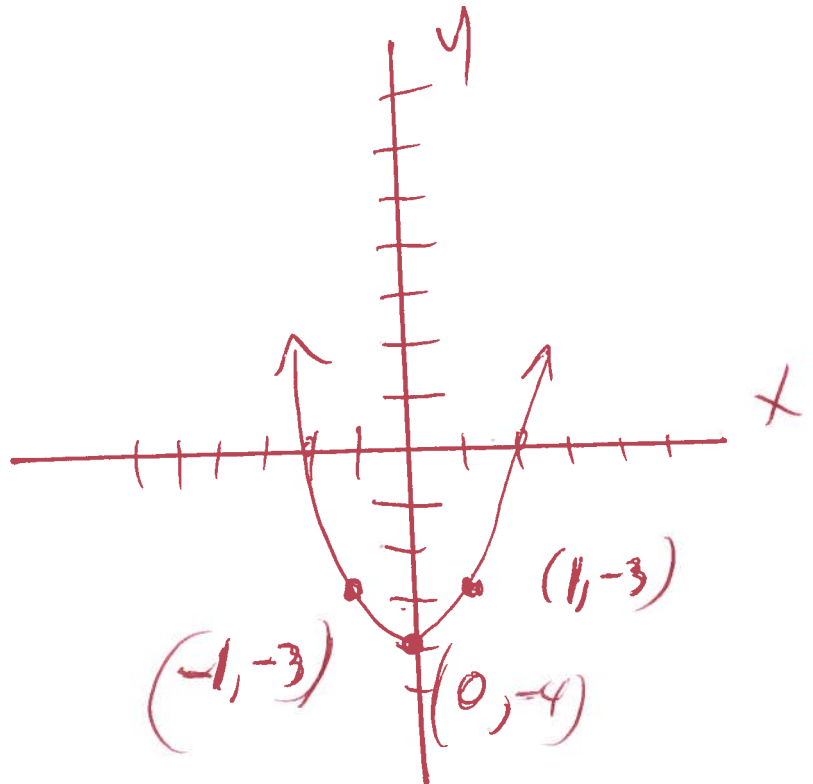
$$y = (1)^2 - 4$$

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

$$y = 1 - 4$$

$$y = -3$$

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



28. Use Quadratic formula

(12)

$$x^2 + 2x + 10 = 0$$

$$1x^2 + 2x + 10 = 0$$

$$a=1, b=2, c=10$$

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

$$x = \frac{-(2) \pm \sqrt{(2)^2 - 4(1)(10)}}{2(1)}$$

$$x = \frac{-2 \pm \sqrt{4 - 40}}{2}$$

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

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

$$x = -1 \pm 3i$$

$$x = -1 - 3i$$

OR

$$x = -1 + 3i$$

$$\{-1 - 3i, -1 + 3i\}$$

formula
 $\sqrt{-1} = i$

29 Use Quadratic formula

13

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

$$a=3, b=2, c=-16$$

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

$$x = \frac{-(2) \pm \sqrt{(2)^2 - 4(3)(-16)}}{2(3)}$$

$$x = \frac{-2 \pm \sqrt{4 + 192}}{6}$$

$$x = \frac{-2 \pm \sqrt{196}}{6}$$

$$x = \frac{-2 \pm 14}{6}$$

$$x = \frac{-2 - 14}{6} \quad \text{OR} \quad x = \frac{-2 + 14}{6}$$

$$x = \frac{-16}{6} \quad \text{OR} \quad x = \frac{12}{6}$$

$$x = \frac{-8}{3} \quad \text{OR} \quad x = 2$$

$$x = -\frac{8}{3}$$

$$\left\{ -\frac{8}{3}, 2 \right\}$$

30.

$$(2+7i) + (-3-11i) =$$

$$2+7i-3-11i =$$

$$-1-4i =$$

14

31.

$$(-3-7i) - (-4+2i) =$$

$$-3-7i+4-2i =$$

$$1-9i =$$