

Prerequisite Review Key

1. 16
2.  $\frac{26}{15}$
3.  $-19.25$  or  $-\frac{77}{4}$
4.  $1.2$  or  $\frac{6}{5}$
5.  $4x - 7y$
6.  $21x^2 + 29xy - 10y^2$
7.  $-15y + 60$
8.  $\frac{x(x+3)}{x+1}$
9.  $\frac{y^2+(1+z)^2}{y(1+z)}$
10.  $\frac{t+1}{t-1}$
11.  $\frac{t^3}{2}$
12.  $\frac{1}{8}$
13.  $\frac{y^{20}}{x^2z^{16}}$
14.  $\frac{-2x^7}{9}$
15.  $\frac{5}{4}$
16.  $13\sqrt{2}$
17.  $32\sqrt{7}$
18.  $-\frac{7}{5\sqrt{2}}$  which becomes  $-\frac{7\sqrt{2}}{10}$
19.  $\frac{2\sqrt{5}}{3\sqrt{3}}$  which becomes  $\frac{2\sqrt{15}}{9}$
20.  $x = \frac{8}{5}$  or 1.6
21.  $y = \frac{4}{3}$
22.  $x = \frac{92}{10}$  or  $\frac{46}{5}$  or 9.2
23.  $x = 3, -4$
24. Use the Quadratic Formula  

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$
 to get  $x = -\frac{3}{2} \pm \frac{\sqrt{5}}{2}$
25.  $x = 2$
26.  $x = -5, 3$
27.  $x = -1, \frac{3}{2}$
28.  $x = \frac{\pi}{3}$
29.  $r = 1 - \frac{a}{s}$
30.  $b = -1, a = 4$
31.  $x = 4, y = 5$
32.  $\frac{2}{3} \leq x < 3$
33.  $x \leq -4$
34. G (34-41 are at the end)
35. G
36. G
37. G
38. G
39. G
40. G
41. G
42. Each base angle measures  $67^\circ$ .
43.  $32^\circ, 148^\circ,$  and  $148^\circ$
44.  $18, 6\sqrt{3},$  and  $12\sqrt{3}$
45.  $3, \frac{3}{2},$  and  $\frac{3\sqrt{3}}{2}$
46.  $9\sqrt{2}$
47. 4 and  $4\sqrt{2}$
48.  $C = 12\pi$
49.  $A = 36\pi$

Prerequisite Review Key

50.  $9y^2 - 900$

*Factor by GCF!*

$$= 9(y^2 - 100)$$

*Factor by Difference of Squares!*

$$= 9(y + 10)(y - 10)$$

51.  $4xy^2 - 4xz^2$

*Factor by GCF!*

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

*Factor by Difference of Squares!*

$$= 4x(y + z)(y - z)$$

52.  $x^2 - 7x + 6$

*Factor by GCF!*

*Factor by Big X!*

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

53.  $12a^2 + 36a + 27$

*Factor by GCF!*

$$= 3(4a^2 + 12a + 9)$$

*Factor by AC Method and Split Middle Term*

$$\rightarrow 4a^2 + 6a + 6a + 9$$

$$\rightarrow 2a(2a + 3) + 3(2a + 3)$$

$$\rightarrow (2a + 3)(2a + 3)$$

$$= 3(2a + 3)(2a + 3)$$

54.  $3x^3 - 15x + 2x^2y - 10y$

*Factor by GCF!*

*Factor by Grouping!*

$$3x^3 - 15x + 2x^2y - 10y$$

$$\rightarrow 3x(x^2 - 5) + 2y(x^2 - 5)$$

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

*Factor by Difference of Squares!*

$$= (3x + 2y)(x - \sqrt{5})(x + \sqrt{5})$$

55.  $x^4 - 3x^2 - 4$

*Factor by GCF!*

*Factor by Big X!*

$$= (x^2 - 4)(x^2 + 1)$$

*Factor by Difference of Squares!*

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

56.  $5x^2 + 4x - 1$

*Factor by GCF!*

*Factor by AC Method and Split Middle Term*

$$\rightarrow 5x^2 + 5x - 1x - 1$$

$$\rightarrow 5x(x + 1) - 1(x + 1)$$

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

57.  $3x^2 - 8x + 5$

*Factor by GCF!*

*Factor by AC Method and Split Middle Term*

$$\rightarrow 3x^2 - 3x - 5x + 5$$

$$\rightarrow 3x(x - 1) - 5(x - 1)$$

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

58.  $x^3 - 12x^2 + 36x$

*Factor by GCF!*

$$= x(x^2 + 12x + 36)$$

*Factor by Big X!*

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

$$= x(x + 6)^2$$

59.  $x^2 + 2x + 1 - y^2$

*Factor by GCF!*

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

*Factor by Difference of Squares!*

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

OR

*Factor by Big X!*

$$(x + 1)^2 - y^2$$

*Factor by Difference of Squares!*

$$((x + 1) + y)((x + 1) - y)$$

## Prerequisite Review Key

### Part 7

34. Determine the slope between the points (4, -3) and (-6, 4).

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{4 - (-3)}{-6 - 4} = \frac{7}{-10}$$

35. Determine the slope of the line  $-2y - x = -2$ .

$$-2y - x = -2$$

$$-2y = x - 2$$

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

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

36. Write in slope-intercept form the equation of the line containing the point (1, 2) and parallel to the given line  $y = 2x + 4$ .

$$y = mx + b$$

*Parallel slopes are the same!*  $\rightarrow m = 2$

*Plug in x and y to solve for b*  $\rightarrow 2$

$$= 2(1) + b$$

$$2 = 2 + b$$

$$0 = b$$

$$y = mx + b \rightarrow y = 2x + 0 \rightarrow y = 2x$$

37. Write in slope-intercept form the equation of the line containing the point (4, 5) and perpendicular to the given line  $y = 6x - 1$ .

$$y = mx + b$$

*Perpendicular slopes are negative reciprocals!*

$$\rightarrow m = -\frac{1}{6}$$

*Plug in x and y to solve for b*  $\rightarrow 5$

$$= -\frac{1}{6}(4) + b$$

$$5 = -\frac{4}{6} + b$$

$$\frac{5}{1} + \frac{4}{6} = b$$

$$\frac{30 + 4}{6} = b$$

$$\frac{34}{6} = \frac{17}{3} = b$$

$$y = mx + b \rightarrow y = -\frac{1}{6}x + \frac{17}{3}$$

### Part 8

$$38. \frac{x^2 + 6x + 8}{x^2 - 4x + 3} \cdot \frac{x^2 - 5x + 4}{5x + 10}$$

*Factor first!*

$$\rightarrow x^2 + 6x + 8 \rightarrow \text{Big X}$$

$$= (x + 2)(x + 4)$$

$$\rightarrow x^2 - 4x + 3 \rightarrow \text{Big X}$$

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

$$\rightarrow x^2 - 5x + 4 \rightarrow \text{Big X}$$

$$= (x - 1)(x - 4)$$

$$\rightarrow 5x + 10 \rightarrow \text{GCF}$$

$$= 5(x + 2)$$

$$\frac{(x + 2)(x + 4)}{(x - 1)(x - 3)} \cdot \frac{(x - 1)(x - 4)}{5(x + 2)}$$

*Cross out same factors on top and bottom!*

Prerequisite Review Key

$$\frac{(x+2)(x+4)}{(x-1)(x-3)} \cdot \frac{(x-1)(x-4)}{5(x+2)}$$

$$= \frac{(x-4)(x+4)}{5(x-3)}$$

39.  $\frac{x^2+8x}{9x} \div \frac{x^2-64}{3x^2}$

Factor first!

$$\rightarrow x^2 + 8x \rightarrow GCF$$

$$= x(x+8)$$

$$\rightarrow x^2 - 64 \rightarrow \text{Difference of Squares}$$

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

$$\frac{x(x+8)}{9x} \div \frac{(x+8)(x-8)}{3x^2}$$

When dividing by a fraction, multiply by the reciprocal!

$$\frac{x(x+8)}{9x} \cdot \frac{3x^2}{(x+8)(x-8)}$$

Cross out same factors on top and bottom!

$$\frac{x(x+8)}{9x} \cdot \frac{3x^2}{(x+8)(x-8)}$$

$$= \frac{3x^2}{9(x-8)}$$

$$= \frac{x^2}{3(x-8)}$$

40.  $\frac{4}{x^2+5x+6} + \frac{2x}{x+2}$

Factor first!

$$\rightarrow x^2 + 5x + 6 \rightarrow \text{Big X}$$

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

$$\frac{4}{(x+2)(x+3)} + \frac{2x}{x+2}$$

When adding fractions, get common denominators!

$$\frac{4}{(x+2)(x+3)} + \frac{2x}{x+2} \cdot \frac{x+3}{x+3}$$

Distribute the 2x to the x + 3!

$$\frac{4 + 2x^2 + 6x}{(x+2)(x+3)}$$

Combine like terms!

Try to simplify by factoring!

$$4 + 2x^2 + 6x \rightarrow GCF$$

$$= 2(x^2 + 3x + 2) \rightarrow \text{Big X}$$

$$= 2(x+1)(x+2)$$

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

Cross out the same factors on the top and bottom!

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

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

41.  $\frac{3}{x-1} - \frac{2}{x-2}$

Factor first!

When adding fractions, get common denominators!

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

Distribute!

$$\frac{3x - 6 - 2x + 2}{(x-2)(x-1)}$$

Combine like terms!

$$\frac{x-4}{(x-2)(x-1)}$$

Try to simplify by factoring!

Cross out the same factors on the top and bottom!

$$= \frac{x-4}{(x-2)(x-1)}$$