

Skill Check

33. 450 miles/in $m = 450 \text{ mi/in} (2.25 \text{ in})$
 $= 1,012.50 \text{ mi}$

34. a) $\frac{4}{2x} = \frac{2}{3}$ b.) $\frac{x}{36-x} = \frac{4}{5}$

$$\begin{aligned} 3(4) &= 2(2x) \\ 12 &= 4x \\ \frac{6}{2} &= x \\ 3 &= x \end{aligned}$$

$$\begin{aligned} 5x &= 4(36-x) \\ 5x &= 144 - 4x \\ +4x & \quad +4x \\ \hline 9x &= 144 \\ \frac{9x}{9} &= \frac{144}{9} \\ x &= 16 \end{aligned}$$

35. a) $x \cdot x^2 \cdot x^3 = x^6$

b.) $\frac{k^{12}}{k^5} = k^{12-5} = k^7$

36. a) $(3 \cdot x \cdot y)^4$
 $= 3^4 x^4 y^4 = 81x^4y^4$

b.) $\left(\frac{k}{m}\right)^3 = \frac{k^3}{m^3}$

37. a.) $(x^3)^5 = x^{15}$

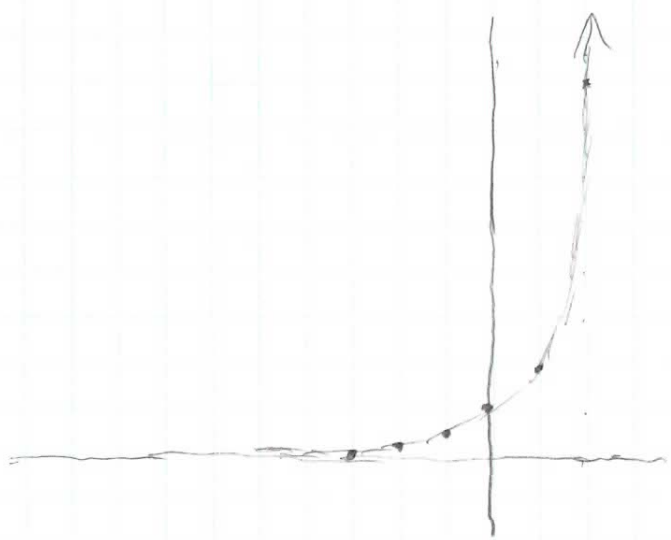
b.) $\left(\frac{y^4}{2^3}\right)^2 = \frac{y^8}{2^6} = \frac{y^8}{64}$

38. a) $4^0 \cdot 5^{-3} = \frac{1}{5^3} = \frac{1}{125}$

b.) $\frac{1}{4x^{10}y^{14}} = \frac{x^{-10}}{4y^{14}}$

39. $y = 2^x$

x	-3	-1	0	1	3
y	1/8	1/2	1	2	8



Skill Check

40. $x \approx 6.5$
 $x \approx 3.4$
 $x = 0$

41. a) $A = 200(4.2)^t$ b.) $A = 7000(1-.06)^t$
 $= 7000(.94)^t$

42. a) $= \sqrt{3 \cdot 100} = 10\sqrt{3}$ b) $\sqrt{32} \cdot \sqrt{2} = \sqrt{64} = 8$

c) $\sqrt{\frac{48}{50}} = \sqrt{\frac{24}{25}} = \frac{\sqrt{4 \cdot 6}}{5} = \frac{2\sqrt{6}}{5}$

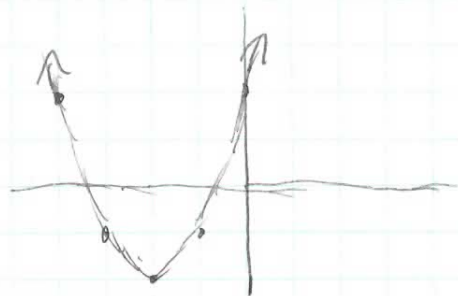
43. a) $x^2 = 25$
 $x = \pm 5$ b) $(x-3)^2 = 36$
 $x-3 = \pm 6$
 $x = 3 \pm 6 = 9, -3$

44. $y = x^2 + 4x + 2$

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

Vertex = $(-2, -2)$

x	-4	-3	-2	-1	0
y	2	-1	-2	-1	2



45. $x = 6$
 $x = -2$
 $x = 0$ or $x = 2$

Skill Check

46. a) $x = \frac{-5 \pm \sqrt{5^2 - 4(1)(4)}}{2(1)}$
 $= \frac{-5 \pm \sqrt{25-16}}{2}$
 $= \frac{-5 \pm \sqrt{9}}{2}$
 $= \frac{-5 \pm 3}{2} = \frac{-2}{2} + \frac{-8}{2}$
 $= -1, -4$

b) $2x^2 + 4x = -5$
 $\quad +5 \quad +5$
 $2x^2 + 4x + 5 = 0$
 $\frac{-4 \pm \sqrt{4^2 - 4(2)(5)}}{2(2)}$
 $\frac{-4 \pm \sqrt{16-40}}{4}$
 $= \frac{-4 \pm \sqrt{-24}}{4}$
 $= \frac{-4 \pm 2i\sqrt{6}}{4}$
 $= -1 \pm \frac{1}{2}i\sqrt{6}$

47. $h = -16t^2 + 18t + 12$

48. a) $(2x^2 - 3x + 4) + (x^3 - 5x)$
 $= x^3 + 2x^2 - 8x + 4$

b) $(2x^2 - 3x + 4) - (x^2 - 5x + 2)$
 $= x^2 + 2x + 2$

49. a) $3x^2(2x^2 - x + 5)$
 $= 6x^4 - 3x^3 + 15x^2$

b) $(x-5)(x+7)$
 $= x^2 + 7x - 5x - 35$
 $= x^2 + 2x - 35$

50. $15x^6 + 9x^5 - 12x^4 + 3x^2$
 $= 3x^2(5x^4 + 3x^3 - 4x^2 + 1)$

51. $x^2 - 9x + 20$
 $(x-4)(x-5)$

52. $3x^2 + x - 8$

$\frac{-1 \pm \sqrt{1^2 - 4(3)(-8)}}{2(3)} = \frac{-1 \pm \sqrt{97}}{6}$

$\left. \begin{aligned} &(x - (-1 + \sqrt{97})/6) \\ &(x - (-1 - \sqrt{97})/6) \end{aligned} \right\}$

53. a) $\{2, -5\}$

b) $\{0, 4, -3/2\}$

skill check

- 54
- C. $y = 50(1.25)^x$
 - E. $y = 3x^2 - 2x + 5$
 - A. $y = 2x - 5$
 - F. $y = x^3 - 4x^2$
 - D. $y = 100(0.65)^x$
 - B. $y = -|x+2| + 2$

- 55.
- F Linear
 - C Absolute Value linear
 - D Exponential Growth
 - B Exponential Decay
 - A Quadratic
 - E Other Function

56. $y = x^2 - 5$ use interval notation
- D $(-\infty, \infty)$
 - R $(0, \infty)$