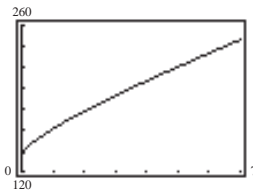


$$\begin{aligned}
 97. \quad 1.5 &= 2\pi\sqrt{\frac{L}{32}} \\
 \left(\frac{1.5}{2\pi}\right)^2 &= \left(\sqrt{\frac{L}{32}}\right)^2 \\
 \frac{2.25}{4\pi^2} &= \frac{L}{32} \\
 \frac{2.25}{4\pi^2}(32) &= L \\
 1.82 \text{ feet} &\approx L
 \end{aligned}$$

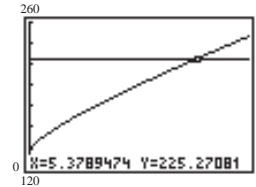
$$\begin{aligned}
 99. \quad 30.02 &= 50 - \sqrt{0.8(x-1)} \\
 \sqrt{0.8(x-1)} &= 19.98 \\
 (\sqrt{0.8(x-1)})^2 &= (19.98)^2 \\
 0.8(x-1) &= 399.2004 \\
 0.8x - 0.8 &= 399.2004 \\
 0.8x &= 400.0004 \\
 x &= 500.0005 \\
 &\approx 500 \text{ units}
 \end{aligned}$$

101. (a) Keystrokes:

y_1 $\boxed{Y=}$ 133.5 $\boxed{+}$ 9.3 $\boxed{X,T,\theta}$ $\boxed{+}$ 18 $\boxed{\sqrt{}}$ $\boxed{X,T,\theta}$ $\boxed{\text{GRAPH}}$



(b)



≈ 5 years from 1990 ≈ 1995

$$\begin{aligned}
 103. \quad R &= \left(\frac{A}{P}\right)^{1/n} - 1 \\
 0.07 &= \left(\frac{25,000}{P}\right)^{1/10} - 1 \\
 1.07 &= \left(\frac{25,000}{P}\right)^{1/10} \\
 1.07 &= \sqrt[10]{\frac{25,000}{P}} \\
 1.07^{10} &= \left(\sqrt[10]{\frac{25,000}{P}}\right)^{10} \\
 1.07^{10} &= \frac{25,000}{P} \\
 P &= \frac{25,000}{1.07^{10}} \\
 P &\approx \$12,708.73
 \end{aligned}$$

105. No. It is not an operation that necessarily yields an equivalent equation. There may be extraneous solutions.

$$\begin{aligned}
 107. \quad (\sqrt{x} + \sqrt{6})^2 &\neq (\sqrt{x})^2 + (\sqrt{6})^2 \\
 (\sqrt{x} + \sqrt{6})^2 &\text{ must be multiplied by FOIL.}
 \end{aligned}$$

Section 5.5 Complex Numbers

$$\begin{aligned}
 1. \quad \sqrt{-4} &= \sqrt{-1 \cdot 4} \\
 &= \sqrt{-1} \cdot \sqrt{4} \\
 &= 2i
 \end{aligned}$$

$$\begin{aligned}
 3. \quad -\sqrt{-144} &= -\sqrt{144 \cdot -1} \\
 &= -\sqrt{144} \cdot \sqrt{-1} \\
 &= -12i
 \end{aligned}$$

$$\begin{aligned}
 5. \quad \sqrt{\frac{-4}{25}} &= \sqrt{\frac{4}{25} \cdot -1} \\
 &= \sqrt{\frac{4}{25}} \cdot \sqrt{-1} \\
 &= \frac{2}{5}i
 \end{aligned}$$

$$\begin{aligned} 7. \sqrt{-0.09} &= \sqrt{0.09 \cdot -1} \\ &= \sqrt{0.09} \cdot \sqrt{-1} \\ &= 0.3i \end{aligned}$$

$$\begin{aligned} 9. \sqrt{-8} &= \sqrt{4 \cdot 2 \cdot -1} \\ &= \sqrt{4} \cdot \sqrt{2} \cdot \sqrt{-1} \\ &= 2i\sqrt{2} \end{aligned}$$

$$\begin{aligned} 11. \sqrt{-27} &= \sqrt{-1 \cdot 9 \cdot 3} \\ &= \sqrt{-1} \cdot \sqrt{9} \cdot \sqrt{3} \\ &= 3i\sqrt{3} \end{aligned}$$

$$\begin{aligned} 13. \sqrt{-7} &= \sqrt{7 \cdot -1} \\ &= \sqrt{7} \cdot \sqrt{-1} \\ &= i\sqrt{7} \end{aligned}$$

$$\begin{aligned} 15. \frac{\sqrt{-12}}{\sqrt{-3}} &= \frac{\sqrt{4 \cdot 3 \cdot -1}}{\sqrt{3 \cdot -1}} \\ &= \frac{\sqrt{4} \cdot \sqrt{3} \cdot \sqrt{-1}}{\sqrt{3} \cdot \sqrt{-1}} \\ &= \sqrt{4} = 2 \end{aligned}$$

$$\begin{aligned} 17. \frac{\sqrt{-20}}{\sqrt{4}} &= \sqrt{\frac{-20}{4}} \\ &= \sqrt{-5} \\ &= \sqrt{5} \cdot \sqrt{-1} \\ &= i\sqrt{5} \end{aligned}$$

or

$$\frac{\sqrt{-12}}{\sqrt{-3}} = \sqrt{\frac{-12}{-3}} = \sqrt{4} = 2$$

$$\begin{aligned} 19. \sqrt{\frac{-18}{64}} &= \sqrt{\frac{-1 \cdot 9 \cdot 2}{64}} \\ &= \frac{3i}{8}\sqrt{2} \end{aligned}$$

$$\begin{aligned} 21. \sqrt{-16} + \sqrt{-36} &= 4i + 6i \\ &= (4 + 6)i \\ &= 10i \end{aligned}$$

$$\begin{aligned} 23. \sqrt{-50} - \sqrt{-8} &= 5i\sqrt{2} - 2i\sqrt{2} \\ &= (5\sqrt{2} - 2\sqrt{2})i \\ &= 3\sqrt{2}i \end{aligned}$$

$$\begin{aligned} 25. \sqrt{-48} + \sqrt{-12} - \sqrt{-27} &= \sqrt{16 \cdot 3 \cdot -1} + \sqrt{4 \cdot 3 \cdot -1} - \sqrt{9 \cdot 3 \cdot -1} \\ &= 4i\sqrt{3} + 2i\sqrt{3} - 3i\sqrt{3} \\ &= (4i + 2i - 3i)\sqrt{3} \\ &= 3i\sqrt{3} \end{aligned}$$

$$\begin{aligned} 27. \sqrt{-8}\sqrt{-2} &= (2i\sqrt{2})(i\sqrt{2}) \\ &= 2 \cdot 2 \cdot i^2 \\ &= 4(-1) = -4 \end{aligned}$$

$$\begin{aligned} 29. \sqrt{-18}\sqrt{-3} &= (3i\sqrt{2})(i\sqrt{3}) \\ &= 3\sqrt{6} \cdot i^2 \\ &= -3\sqrt{6} \end{aligned}$$

$$31. \sqrt{-0.16}\sqrt{-1.21} = (0.4i)(1.1i) = 0.44i^2 = -0.44$$

$$\begin{aligned} 33. \sqrt{-3}(\sqrt{-3} + \sqrt{-4}) &= i\sqrt{3}(i\sqrt{3} + 2i) \\ &= (i\sqrt{3})^2 + 2\sqrt{3}i^2 \\ &= -3 - 2\sqrt{3} \end{aligned}$$

$$\begin{aligned} 35. \sqrt{-5}(\sqrt{-16} - \sqrt{-10}) &= i\sqrt{5}(4i - i\sqrt{10}) \\ &= i^2 4\sqrt{5} - i^2 \sqrt{50} \\ &= -4\sqrt{5} + 5\sqrt{2} \\ &= 5\sqrt{2} - 4\sqrt{5} \end{aligned}$$

$$\begin{aligned} 37. \sqrt{-2}(3 - \sqrt{-8}) &= i\sqrt{2}(3 - 2i\sqrt{2}) \\ &= 3\sqrt{2}i - 2i^2(2) \\ &= 3\sqrt{2}i + 4 \end{aligned}$$

$$\begin{aligned} 39. (\sqrt{-16})^2 &= (4i)^2 \\ &= 16i^2 \\ &= -16 \end{aligned}$$

$$\begin{aligned} 41. (\sqrt{-4})^3 &= (2i)^3 \\ &= 8i^3 \\ &= -8i \end{aligned}$$

$$\begin{aligned} 43. 3 - 4i &= a + bi \\ a &= 3 \quad b = -4 \end{aligned}$$

$$45. 5 - 4i = (a + 3) + (b - 1)i$$

$$a + 3 = 5 \quad b - 1 = -4$$

$$a = 2 \quad b = -3$$

$$49. (a + 5) + (b - 1)i = 7 - 3i$$

$$a + 5 = 7 \quad b - 1 = -3$$

$$a = 2 \quad b = -2$$

$$53. (-4 - 7i) + (-10 - 33i) = (-4 - 10) + (-7 - 33)i$$

$$= -14 - 40i$$

$$57. (30 - i) - (18 + 6i) + 3i^2 = 30 - i - 18 - 6i - 3$$

$$= 9 - 7i$$

$$61. \left(\frac{4}{3} + \frac{1}{3}i\right) + \left(\frac{5}{6} + \frac{7}{6}i\right) = \left(\frac{4}{3} + \frac{5}{6}\right) + \left(\frac{1}{3} + \frac{7}{6}\right)i$$

$$= \left(\frac{8}{6} + \frac{5}{6}\right) + \left(\frac{2}{6} + \frac{7}{6}\right)i$$

$$= \frac{13}{6} + \frac{9}{6}i$$

$$= \frac{13}{6} + \frac{3}{2}i$$

$$65. 8 - (5 - \sqrt{-63}) + (4 - 5i) = 8 - 5 + 3i\sqrt{7} + 4 - 5i$$

$$= 7 + (3\sqrt{7} - 5)i$$

$$67. (3i)(12i) = 36i^2$$

$$= -36$$

$$71. (-6i)(-i)(6i) = 36i^3 = -36i$$

$$75. (-3i)^2 = 9i^2$$

$$= 9(-1)$$

$$= -9$$

$$79. 4i(-3 - 5i) = -12i - 20i^2 = 20 - 12i$$

$$83. \sqrt{-20}(6 + 2\sqrt{5}i) = 2i\sqrt{5}(6 + 2\sqrt{5}i)$$

$$= 12i\sqrt{5} + 4i^2(5)$$

$$= -20 + 12i\sqrt{5}$$

$$47. -4 - \sqrt{-8} = a + bi$$

$$-4 - 2i\sqrt{2} = a + bi$$

$$-4 = a \quad -2i\sqrt{2} = bi$$

$$-2\sqrt{2} = b$$

$$51. (4 - 3i) + (6 + 7i) = (4 + 6) + (-3 + 7)i$$

$$= 10 + 4i$$

$$55. 13i - (14 - 7i) = (-14) + (13 + 7)i$$

$$= -14 + 20i$$

$$59. 6 - (3 - 4i) + 2i = 6 - 3 + 4i + 2i$$

$$= 3 + 6i$$

$$63. 15i - (3 - 25i) + \sqrt{-81} = 15i - 3 + 25i + 9i$$

$$= -3 + (15 + 25 + 9)i$$

$$= -3 + 49i$$

$$69. (3i)(-8i) = -24i^2$$

$$= -24(-1)$$

$$= 24$$

$$73. (-3i)^3 = -27i^3 = 27i$$

$$77. -5(13 + 2i) = -65 - 10i$$

$$81. (9 - 2i)(\sqrt{-4}) = (9 - 2i)(2i)$$

$$= 18i - 4i^2$$

$$= 18i + 4$$

$$= 4 + 18i$$

$$85. (4 + 3i)(-7 + 4i) = -28 + 16i - 21i + 12i^2$$

$$= -28 - 12 - 5i$$

$$= -40 - 5i$$

$$\begin{aligned}
 87. (-7 + 7i)(4 - 2i) &= -28 + 14i + 28i - 14i^2 \\
 &= -28 + 42i + 14 \\
 &= -14 + 42i
 \end{aligned}$$

$$\begin{aligned}
 89. (-2 + \sqrt{-5})(-2 - \sqrt{-5}) &= (-2 + i\sqrt{5})(-2 - i\sqrt{5}) \\
 &= 4 + 2i\sqrt{5} - 2i\sqrt{5} - 5i^2 \\
 &= 4 + 5 \\
 &= 9
 \end{aligned}$$

$$\begin{aligned}
 91. (3 - 4i)^2 &= 3^2 - 2(3)(4i) + (4i)^2 \\
 &= 9 - 24i + 16i^2 \\
 &= 9 - 16 - 24i \\
 &= -7 - 24i
 \end{aligned}$$

$$\begin{aligned}
 95. (2 + i)^3 &= (2 + i)(2 + i)(2 + i) \\
 &= (4 + 2(2)i + i^2)(2 + i) \\
 &= (4 + 4i - 1)(2 + i) \\
 &= (3 + 4i)(2 + i) \\
 &= 6 + 3i + 8i + 4i^2 \\
 &= 6 + 3i + 8i - 4 \\
 &= 2 + 11i
 \end{aligned}$$

$$\begin{aligned}
 99. -2 - 8i, \text{ conjugate} &= -2 + 8i \\
 \text{product} &= (-2 - 8i)(-2 + 8i) \\
 &= (-2)^2 - (8i)^2 \\
 &= 4 - 64i^2 = 4 + 64 = 68
 \end{aligned}$$

$$\begin{aligned}
 103. 10i, \text{ conjugate} &= -10i \\
 \text{product} &= (10i)(-10i) \\
 &= -(10i)^2 \\
 &= -100i^2 \\
 &= 100
 \end{aligned}$$

$$\begin{aligned}
 105. 1 + \sqrt{-3} &= 1 + i\sqrt{3}, \text{ conjugate} = 1 - i\sqrt{3} \\
 \text{product} &= (1 + i\sqrt{3})(1 - i\sqrt{3}) \\
 &= 1^2 - (i\sqrt{3})^2 \\
 &= 1 - 3i^2 \\
 &= 1 + 3 \\
 &= 4
 \end{aligned}$$

$$\begin{aligned}
 93. (2 + 5i)^2 &= 2^2 + 2(2)(5i) + (5i)^2 \\
 &= 4 + 20i + 25i^2 \\
 &= 4 - 25 + 20i \\
 &= -21 + 20i
 \end{aligned}$$

$$\begin{aligned}
 97. 2 + i, \text{ conjugate} &= 2 - i \\
 \text{product} &= (2 + i)(2 - i) \\
 &= 2^2 - i^2 \\
 &= 4 + 1 \\
 &= 5
 \end{aligned}$$

$$\begin{aligned}
 101. 5 - \sqrt{6}i, \text{ conjugate} &= 5 + \sqrt{6}i \\
 \text{product} &= (5 - \sqrt{6}i)(5 + \sqrt{6}i) \\
 &= 5^2 - (\sqrt{6}i)^2 \\
 &= 25 - 6i^2 = 25 + 6 = 31
 \end{aligned}$$

$$\begin{aligned}
 107. \quad 1.5 + \sqrt{-0.25}, \text{ conjugate} &= 1.5 - \sqrt{-0.25} \\
 \text{product} &= (1.5 + 0.5i)(1.5 - 0.5i) \\
 &= 1.5^2 - (0.5i)^2 \\
 &= 2.25 + 0.25 \\
 &= 2.5
 \end{aligned}$$

$$\begin{aligned}
 109. \quad \frac{20}{2i} &= \frac{10}{i} \cdot \frac{-i}{-i} = \frac{-10i}{1} \\
 &= 0 - 10i
 \end{aligned}$$

$$\begin{aligned}
 111. \quad \frac{4}{1-i} &= \frac{4}{1-i} \cdot \frac{1+i}{1+i} = \frac{4(1+i)}{1+1} \\
 &= \frac{4(1+i)}{2} \\
 &= 2(1+i) \\
 &= 2 + 2i
 \end{aligned}$$

$$\begin{aligned}
 113. \quad \frac{-12}{2+7i} &= \frac{-12}{2+7i} \cdot \frac{2-7i}{2-7i} = \frac{-12(2-7i)}{4+49} \\
 &= \frac{-12(2-7i)}{53} \\
 &= \frac{-24+84i}{53} \\
 &= \frac{-24}{53} + \frac{84}{53}i
 \end{aligned}$$

$$\begin{aligned}
 115. \quad \frac{4i}{1-3i} &= \frac{4i}{1-3i} \cdot \frac{1+3i}{1+3i} = \frac{4i(1+3i)}{1+9} \\
 &= \frac{4i+12i^2}{10} \\
 &= \frac{-12+4i}{10} = \frac{4(-3+i)}{10} \\
 &= \frac{2(-3+i)}{5} = \frac{-6+2i}{5} \\
 &= -\frac{6}{5} + \frac{2}{5}i
 \end{aligned}$$

$$\begin{aligned}
 117. \quad \frac{2+3i}{1+2i} &= \frac{2+3i}{1+2i} \cdot \frac{1-2i}{1-2i} = \frac{2-4i+3i-6i^2}{1+4} \\
 &= \frac{2+6-i}{5} \\
 &= \frac{8-i}{5} \\
 &= \frac{8}{5} - \frac{1}{5}i
 \end{aligned}$$

$$\begin{aligned}
 119. \quad \frac{1}{1-2i} + \frac{4}{1+2i} &= \frac{1}{1-2i} \cdot \frac{1+2i}{1+2i} + \frac{4}{1+2i} \cdot \frac{1-2i}{1-2i} \\
 &= \frac{1+2i}{1+4} + \frac{4-8i}{1+4} = \frac{1+2i}{5} + \frac{4-8i}{5} \\
 &= \frac{(1+4) + (2-8)i}{5} = \frac{5-6i}{5} \\
 &= 1 - \frac{6}{5}i
 \end{aligned}$$

$$\begin{aligned}
 121. \quad \frac{i}{4-3i} - \frac{5}{2+i} &= \frac{i}{4-3i} \cdot \frac{4+3i}{4+3i} - \frac{5}{2+i} \cdot \frac{2-i}{2-i} \\
 &= \frac{4i+3i^2}{16+9} - \frac{10-5i}{4+1} = \frac{-3+4i}{25} - \frac{10-5i}{5} \cdot \frac{5}{5} \\
 &= \frac{-3+4i}{25} - \frac{50-25i}{25} = \frac{(-3-50) + (4+25)i}{25} \\
 &= \frac{-53+29i}{25} = \frac{-53}{25} + \frac{29}{25}i
 \end{aligned}$$

123. (a) $x = -1 + 2i$

$$(-1 + 2i)^2 + 2(-1 + 2i) + 5 \stackrel{?}{=} 0$$

$$1 - 4i + 4i^2 - 2 + 4i + 5 \stackrel{?}{=} 0$$

$$1 - 4 - 2 + 5 \stackrel{?}{=} 0$$

$$0 = 0 \text{ Solution}$$

(b) $x = -1 - 2i$

$$(-1 - 2i)^2 + 2(-1 - 2i) + 5 \stackrel{?}{=} 0$$

$$1 + 4i + 4i^2 - 2 - 4i + 5 \stackrel{?}{=} 0$$

$$1 - 4 - 2 + 5 \stackrel{?}{=} 0$$

$$0 = 0 \text{ Solution}$$

125. (a) $x = -4$

$$(-4)^3 + 4(-4)^2 + 9(-4) + 36 \stackrel{?}{=} 0$$

$$-64 + 64 - 36 + 36 \stackrel{?}{=} 0$$

$$0 = 0 \text{ Solution}$$

(b) $x = -3i$

$$(-3i)^3 + 4(-3i)^2 + 9(-3i) + 36 \stackrel{?}{=} 0$$

$$-27i^3 + 36i^2 - 27i + 36 \stackrel{?}{=} 0$$

$$27i - 36 - 27i + 36 \stackrel{?}{=} 0$$

$$0 = 0 \text{ Solution}$$

$$\begin{aligned}
 127. \text{ (a)} \quad \left(\frac{-5 + 5\sqrt{3}i}{2}\right)^3 &= \left(\frac{-5}{2} + \frac{5}{2}\sqrt{3}i\right)^2 \left(\frac{-5}{2} + \frac{5}{2}\sqrt{3}i\right) \\
 &= \left(\frac{25}{4} - \frac{25}{2}\sqrt{3}i + \frac{25}{4}(3i)^2\right) \left(\frac{-5}{2} + \frac{5}{2}\sqrt{3}i\right) \\
 &= \left(\frac{25}{4} - \frac{25}{2}\sqrt{3}i - \frac{75}{4}\right) \left(\frac{-5}{2} + \frac{5}{2}\sqrt{3}i\right) \\
 &= \left(\frac{-50}{4} - \frac{25}{2}\sqrt{3}i\right) \left(\frac{-5}{2} + \frac{5}{2}\sqrt{3}i\right) \\
 &= \left(\frac{-25}{2} - \frac{25}{2}\sqrt{3}i\right) \left(\frac{-5}{2} + \frac{5}{2}\sqrt{3}i\right) \\
 &= \frac{125}{4} - \frac{125}{4}\sqrt{3}i + \frac{125}{4}\sqrt{3}i - \frac{125}{4}(3i)^2 \\
 &= \frac{125}{4} + \frac{375}{4} \\
 &= \frac{500}{4} = 125
 \end{aligned}$$

(b) use same method as part (a)

129. (a) $1, \frac{-1 + \sqrt{3}i}{2}, \frac{-1 - \sqrt{3}i}{2}$

(b) $2, \frac{-2 + 2\sqrt{3}i}{2} = -1 + \sqrt{3}i, \frac{-2 - 2\sqrt{3}i}{2} = -1 - \sqrt{3}i$

(c) $4, \frac{-4 + 4\sqrt{3}i}{2} = -2 + 2\sqrt{3}i, \frac{-4 - 4\sqrt{3}i}{2} = -2 - 2\sqrt{3}i$

131. $(a + bi) + (a - bi) = (a + a) + (b - b)i$
 $= 2a + 0i$

133. $(a + bi) - (a - bi) = (a - a) + (b + b)i$
 $= 0 + 2bi$

135. $i = \sqrt{-1}$

$$137. \sqrt{-3}\sqrt{-3} = \sqrt{(-3)(-3)} = \sqrt{9} = 3$$

The product rule for radicals does not hold if both radicands are negative.

$$\sqrt{-3}\sqrt{-3} = i\sqrt{3} \cdot i\sqrt{3} = i^2(3) = -3$$

$$139. 3 - 2i, \text{ conjugate} = 3 + 2i$$

$$\begin{aligned} \text{product} &= (3 - 2i)(3 + 2i) \\ &= 3^2 - (2i)^2 \\ &= 9 + 4 \\ &= 13 \end{aligned}$$

Review Exercises for Chapter 5

$$1. \sqrt{49} = 7 \text{ because } 7 \cdot 7 = 49$$

$$3. -\sqrt{81} = -9 \text{ because } 9 \cdot 9 = 81$$

$$5. \sqrt[3]{-8} = -2 \text{ because } -2 \cdot -2 \cdot -2 = -8$$

$$7. -\sqrt[3]{64} = -4 \text{ because } 4 \cdot 4 \cdot 4 = 64$$

$$9. \sqrt{(1.2)^2} = 1.2 \text{ (inverse property of powers and roots)}$$

$$11. \sqrt{\left(\frac{5}{6}\right)^2} = \frac{5}{6} \text{ (inverse property of powers and roots)}$$

$$13. \sqrt[3]{-\left(\frac{1}{5}\right)^3} = -\frac{1}{5} \text{ (inverse property of powers and roots)}$$

$$15. \sqrt{-2^2} = 2i$$

$$17. 49^{1/2} = 7$$

$$19. \sqrt[3]{216} = 6$$

$$21. 27^{4/3} = (\sqrt[3]{27})^4 = 3^4 = 81$$

$$23. -(5^2)^{3/2} = -(\sqrt{25})^3 = -5^3 = -125$$

$$25. 8^{-4/3} = \frac{1}{8^{4/3}} = \frac{1}{(\sqrt[3]{8})^4} = \frac{1}{2^4} = \frac{1}{16}$$

$$\begin{aligned} 27. -\left(\frac{27}{64}\right)^{2/3} &= -\left(\sqrt[3]{\frac{27}{64}}\right)^2 \\ &= -\left(\frac{3}{4}\right)^2 \\ &= -\frac{9}{16} \end{aligned}$$

$$\begin{aligned} 29. x^{3/4} \cdot x^{-1/6} &= x^{3/4 + (-1/6)} \\ &= x^{9/12 + (-2)/12} \\ &= x^{7/12} \end{aligned}$$

$$\begin{aligned} 31. z\sqrt[3]{z^2} &= z \cdot z^{2/3} \\ &= z^{1+2/3} \\ &= z^{5/3} \end{aligned}$$

$$33. \frac{\sqrt[4]{x^3}}{\sqrt{x^4}} = \frac{x^{3/4}}{x^{4/2}} = x^{3/4-2} = x^{3/4-8/4} = x^{-5/4} = \frac{1}{x^{5/4}}$$

$$35. \sqrt[3]{a^3b^2} = a\sqrt[3]{b^2}$$

$$37. \sqrt[4]{\sqrt{x}} = \sqrt[4]{x^{1/2}} = (x^{1/2})^{1/4} = x^{1/8} = \sqrt[8]{x}$$

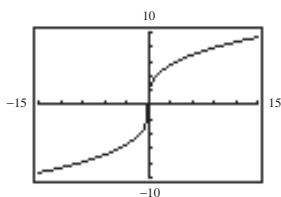
$$\begin{aligned} 39. \frac{(3x+2)^{2/3}}{\sqrt[3]{3x+2}} &= \frac{(3x+2)^{2/3}}{(3x+2)^{1/3}} \\ &= (3x+2)^{2/3-1/3} \\ &= (3x+2)^{1/3} \\ &= \sqrt[3]{3x+2} \end{aligned}$$

$$41. 75^{-3/4} = 0.0392377 \approx 0.04$$

$$43. \sqrt{13^2 - 4(2)(7)} = 10.630146 \approx 10.63$$

45. Keystrokes:

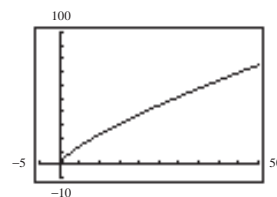
$\boxed{Y=}$ $\boxed{3}$ $\boxed{\sqrt[3]{}}$ $\boxed{2}$ $\boxed{X,T,\theta}$ $\boxed{\text{GRAPH}}$



Domain = $(-\infty, \infty)$

47. Keystrokes:

$\boxed{Y=}$ $\boxed{4}$ $\boxed{X,T,\theta}$ $\boxed{\wedge}$ $\boxed{.75}$ $\boxed{\text{GRAPH}}$



Domain = $[0, \infty)$