

Chapter 1

1) a. $\left[\frac{4}{3}, \infty\right)$ b. $(-\infty, 4) \cup (4, 7]$ c. $\left(\frac{7}{3}, \infty\right)$ d. $\left(-\infty, -\frac{3}{2}\right) \cup \left(-\frac{3}{2}, 1\right) \cup (1, 3]$

2) a. Increasing $(-\infty, \infty)$ b. Increasing $(-\infty, 0]$ c. Decreasing $(-\infty, -2] \cup [3, \infty)$ Constant $(-2, 3)$

3) Graphs **a** and **d**

4) a. Odd b. Even c. Odd d. Neither

5) a. $y = \pm\sqrt{9-x^2}$ b. $y = \pm\sqrt{x+2}$ c. $y = \frac{-3 \pm 10}{4}$

6) a. $x+3-3\sqrt{x+3}$, b. $2\sqrt{\frac{x-2}{x+1}}$, c. $\frac{3}{x^2-3x+1}$, d. $4-4x-6\sqrt{1-x}$

$[-3, \infty)$ $[2, \infty)$ $\left(-\infty, \frac{3-\sqrt{5}}{2}\right) \cup \left(\frac{3-\sqrt{5}}{2}, \frac{3+\sqrt{5}}{2}\right) \cup \left(\frac{3+\sqrt{5}}{2}, \infty\right)$ $(-\infty, 1]$

7) a. Left 8, Flipped over y-axis, Horizontally Shrunk by a Factor of $\frac{1}{2}$, Down 7

b. Left 5, Flipped over the y-axis, Vertically Shrunk by a Factor of 2

c. Vertically Stretched by 9, Horizontally Shrunk by $\frac{1}{2}$, Down 11

8) a. $y = 3\left(-\frac{x-7}{2}\right)^2 - 11$ b. $y = 3\left|\frac{x+3}{4}\right| + 20$

9) Graphs **b**, **c**, and **d**.

Chapter 2A

1) a. $f(x) = (x-4)^2 - 5$

b. $y = 3(x+1)^2 + 2$

(4,5)

(-1,2)

2) a. 3, 5, -5

b. $\pm 2, \pm\sqrt{7}$

c. 1,3,-2

3) a. $3x - 22 + \frac{112}{x+5}$

b. $x^2 - x + \frac{x-2}{2x^2 + x + 1}$

4) a. $7 + 3i, 58$

b. $-5 - 8i, 89$

5) a. $2, \pm 2i$

b. $3 \pm 4i$

c. $\pm i\sqrt{6}$

6) a. $(-\infty, -5) \cup (3, \infty)$

b. $(-\infty, -7] \cup [-3, -1]$

c. $(-2, 2) \cup [5, \infty)$

7) a. is not

b. is, degree=2, LC=7

c. is not

d. is, degree=1, LC=7/3

e. is not

8) a. Roots at 7, 3, 0 and -3. Up to the right, skim at 7, jaunt through 3, straight through 0, and straight through -3

b. Roots at 7, 1, and -4. Down to the right, straight through 7, skim 1, and straight through -4.

Chapter 2B

1) a. $\frac{x+1}{x-2}$

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

c. $\frac{5(x+1)}{2x-1}$

2) a. y-int = 4 Zeros $\pm 1, \pm 2$ LEB $\lim_{x \rightarrow -\infty} f(x) = \infty$ REB $\lim_{x \rightarrow \infty} f(x) = \infty$

b. y-int = -16 Zeroes ± 2 LEB $\lim_{x \rightarrow -\infty} f(x) = \infty$ REB $\lim_{x \rightarrow \infty} f(x) = \infty$

c. y-int = -16 Zeroes $\pm \frac{2}{3}$ LEB $\lim_{x \rightarrow -\infty} f(x) = \infty$ REB $\lim_{x \rightarrow \infty} f(x) = \infty$

3) a. $y=5, x=2$ b. $y=0, x=2$ c. $y=0, x=3, x=-3$

4) a. $x=5, x \neq -4, x \neq -6$ b. no solution, $y \neq -2$

Chapter 3

1) a. $10^x = 7$ b. $4^2 = 16$ c. $u^z = k$

2) a. $\log_7 343 = 3$ b. $\log_{11} 3 = x$ c. $\log_t 11 = 4$

3) a. $2/3$ b. $\frac{1}{2}$ c. $4x$ d. -3

4) a. $\ln 7 + \ln x + \ln y$ b. $\ln x + \ln(x+4) - 1/2 \ln(x^2 + 1)$ c. $3 \log x + 6 \log y - \frac{1}{2} \log z$

5) a. $\log_2 \frac{x^3 \sqrt{t}}{y^2}$ b. $\ln \frac{a^4 \sqrt[3]{c^2}}{b}$ c. $\ln xy^8$

6) a. $x=10, x=-10$ b. $x=4$ c. $x = \pm \sqrt{3.4}$

d. $x=-1/6$ e. $x=-3/4$ f. $x=4$