

Chapter 7

1. a) $|c|d^2|e^3|\sqrt[4]{c^2e}$ b) $m^2p^3r^4\sqrt[5]{m^2r^2}$

2. a) $3E^5F^4\sqrt{5F}$ b) $\frac{2a^4\sqrt{6}}{b^2\sqrt{b}} = \frac{2a^4\sqrt{6b}}{b^3}$ 3. a) $\frac{5\sqrt{49c^2d}}{7c^5d^3}$ b) $\frac{8(5-\sqrt{2})}{23} = \frac{40-8\sqrt{2}}{23}$

4. a) $\sqrt[4]{E}$ b) $\sqrt[3]{Q^2}$ or $(\sqrt[3]{Q})^2$ 5. a) $a^{\frac{3}{7}}$ b) $w^{\frac{9}{2}}$

6. a) $x = 8$ b) $x = 5$ 7. $38\sqrt{2} - 3\sqrt{5}$ 8. $14 - 3\sqrt{3}$

9. a) $-3\sqrt{x+4} + 5$ b) $-2\sqrt{-(x-3)} - 1$

10. a) $\pm\sqrt{\frac{5x+3}{2}}$ b) $\frac{x+7}{-4}$ c) $\frac{\left(\frac{x+9}{4}\right)^3 - 8}{5}$ d) $7 \cdot \sqrt[5]{\frac{x}{10}} - 8$

11. a) No a) Yes

Chapter 8

1. a) Decay b) Growth c) Decay d) Growth

2. a) 16.8% decrease b) 3.34% increase

3. a) $b = 1.57$ b) $b = 1.0056$ c) $b = 0.9896$ d) $b = 0.57$

4. EQ: $y = 4000(1.04)^x$ a) \$3287.71 b) \$5263.73 c) 23.36 years

5. EQ: $y = 250,000(.916)^x$ a) \$325,277.17 b) \$161,219.43 c) 10.44 years

6. a) $\log_5 x = 3$ b) $\log_x 72 = 7$ c) $\log_4 100 = x$ d) skip this one e) $\log 211 = x$

7. a) $3^{20} = x$ b) $10^x = 478$ c) skip this one d) $x^3 = 8$

8. a. graph D b. graph B c. graph C d. graph A. e. graph E

10. 2.069 11. 8.349 12. 64 13. 3.6 14. 16

1. a) 405° b) 510° 2. a) $\frac{13\pi}{3}$ b) $\frac{5\pi}{12}$

3. a) 1 b) 0 c) $-\sqrt{3}$ d) $-\frac{\sqrt{3}}{2}$ e) $-\frac{\sqrt{3}}{2}$

f) -1 g) -1 h) $\frac{\sqrt{3}}{3}$ i) $-\frac{\sqrt{2}}{2}$ j) -1

4. a) Amp = 9, Period = 3π , Midline: $y = -5$, Phase shift: $\frac{\pi}{6}$ left
 b) Amp = 2, Period = $\frac{2\pi}{7}$, Midline: $y = 8$, Phase shift: $\frac{3\pi}{4}$ right

5. $y = 2\sin 3x$ 6. $y = -7\cos\left(\frac{x}{4}\right)$

7. Possible answers are given:

Sine: $y = 5\sin 6\left(x - \frac{\pi}{8}\right) + 1$ Starting Point $\left(\frac{\pi}{8}, 1\right)$

Cosine: $y = 5\cos 6\left(x - \frac{5\pi}{24}\right) + 1$ Starting Point $\left(\frac{5\pi}{24}, 6\right)$

8. Possible answers are given:

a) Pos: $155^\circ, 515^\circ, 1235^\circ, \dots$ Neg: $-205^\circ, -565^\circ, \dots$

b) Pos: $\frac{11\pi}{8}, \frac{43\pi}{8}, \dots$ Neg: $-\frac{5\pi}{8}, -\frac{21\pi}{8}, \dots$

9. $y = -\tan\left(\frac{7x}{2}\right)$ 10. $\sin\theta = \frac{15}{17}$, $\cos\theta = \frac{8}{17}$, $\tan\theta = \frac{15}{8}$, $\sec\theta = \frac{17}{8}$, $\cot\theta = \frac{8}{15}$

11. a) -1.00 b) 0.87