

**Chapter 1/3**

1.  $u_n = 6n + 15$       2. a.  $u_0 = 3$   
 $u_n = u_{n-1} + 6$       b.  $u_0 = 1.7$   
 $u_n = u_{n-1} - 0.5$       c.  $u_0 = -7$   
 $u_n = u_{n-1} - 11$       d.  $u_0 = -7$   
 $u_n = u_{n-1} + 4$

3. a. point-slope form:  $y = \frac{2}{3}(x+8)+6$     intercept form:  $y = \frac{2}{3}x + \frac{34}{3}$   
 b. point-slope form:  $y = -5(x+2)+6$     intercept form:  $y = -5x - 4$   
 c. point-slope form:  $y = -\frac{5}{7}x + 5$     intercept form:  $y = -\frac{5}{7}x + 5$   
 d. point-slope form:  $y = -\frac{1}{3}(x-6)-18$     intercept form:  $y = -\frac{1}{3}x - 16$   
 e. point-slope form:  $y = -\frac{1}{3}(x+3)+8$     intercept form:  $y = -\frac{1}{3}x + 7$   
 f. point-slope form:  $x = 5$     intercept form:  $x = 5$   
 g. point-slope form:  $y = 12$     intercept form:  $y = 12$

4. a. (2,7)    b. (-9,2)    c. (5,6)    d. (2,-1)    e. (-20,10)      5. a.  $b = 22$     b.  $n = -22$

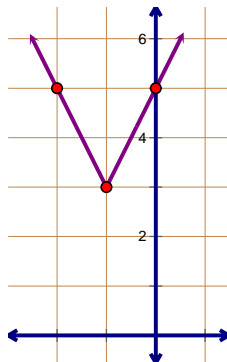
6. They sold 59 gold tickets and 312 silver tickets.

7. They need 35 lbs of peanuts and 15 lbs of raisins for the mix.

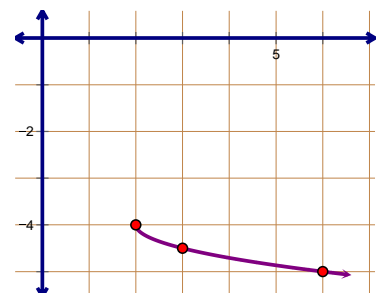
**Chapter 4**

1. a. -1    b. 0    c. -3    d. 1    e.  $x = -4, -2, 1$     f.  $x = 2, 5$

2. a. vertical dilation BAFO 2, left 1, up 3  
 Domain:  $(-\infty, \infty)$     Range:  $[3, \infty)$

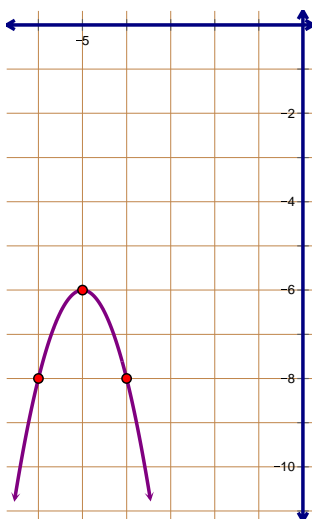


b. reflection over the  $x$ -axis, vertical dilation BAFO  $\frac{1}{2}$ , right 2, down 4  
 Domain:  $[2, \infty)$     Range:  $(-\infty, -4]$



c. reflection over the  $x$ -axis, vertical dilation BAFO 2, left 5, down 6

Domain:  $(-\infty, \infty)$  Range:  $(-\infty, -6]$



3. a.  $f(x) = \left(\frac{1}{2}(x+2)\right)^2 - 3$     b.  $g(x) = 1 + \sqrt{-x}$

c.  $(x+1)^2 + (y-3)^2 = 4$     d.  $\left(\frac{x-2}{3}\right)^2 + \left(\frac{y+1}{4}\right)^2 = 1$

e.  $h(x) = -\left|\frac{x-4}{3}\right|$

4. a. 9    b. 22    c. 58    d. 26    e.  $16x^2 + 16x + 9$     f.  $4x^2 + 22$

5. a. Yes    b. No    c. Yes    d. No

6. a.  $\frac{2}{3}$     b. 7    c. -2    d.  $x=3, x=-1$     e.  $x=-5, x=0$

f.  $x=-1, x=1, x=5$

7. a. D:  $[-5, -1) \cup (-1, \infty)$     R:  $(-\infty, 4]$     b. D:  $[-2, 5)$     R:  $[0, 4)$

8. a.  $x=-1, x=-17$     b.  $x=4, x=-6$

## Chapter 5A

1. a.  $u_0 = 49$   
 $u_n = \frac{1}{7}u_{n-1}$  where  $n \geq 1$     b.  $y = 49\left(\frac{1}{7}\right)^x$

2. a.  $u_0 = 2$   
 $u_n = 3u_{n-1}$  where  $n \geq 1$     b.  $y = 2(3)^x$

$$u_0 = 300$$

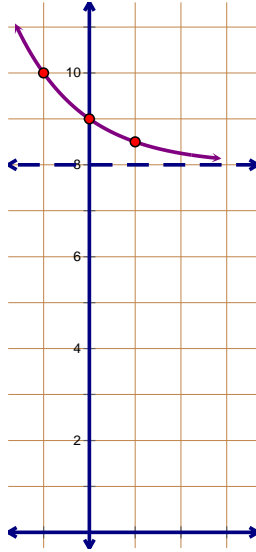
3. a.  $u_n = \frac{2}{3}u_{n-1}$  where  $n \geq 1$

b. 59.259 mg

4. a.  $f(x) = 2^{x-3} + 1$     b.  $g(x) = -(3)^{x+2} - 3$

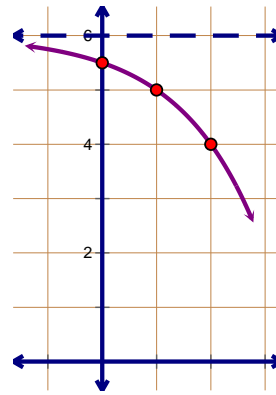
5. a. parent function:  $y = \left(\frac{1}{2}\right)^x$  up 8

Domain:  $(-\infty, \infty)$     Range:  $(8, \infty)$



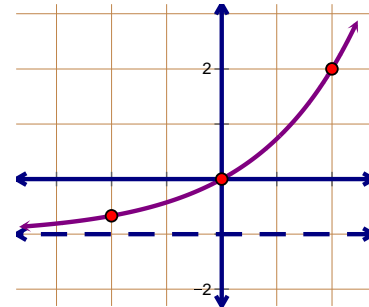
b. parent function:  $y = 2^x$  reflection over the  $x$ -axis, right 1, up 6

Domain:  $(-\infty, \infty)$     Range:  $(-\infty, 6)$



c. parent function:  $y = 3^x$  horizontal dilation BAFO 2, down 1

Domain:  $(-\infty, \infty)$     Range:  $(-1, \infty)$



6. a.  $-\frac{1}{125}$     b.  $18x^2y^4$     c.  $\frac{c^9}{729}$     d.  $\frac{b^4}{25a^{10}}$     e.  $\frac{16y^2}{x^6}$     f.  $4m^3n^{16}\sqrt[3]{2mn^2}$

7. a. 243    b.  $\frac{15}{4}$     c. -6    d. 4

8. a.  $n^{\frac{1}{7}}p^{\frac{4}{7}}$     b.  $\sqrt[3]{121}$     c.  $129^{\frac{1}{20}}$

9.  $y = 32,000(0.916)^x \rightarrow \$24,594.41$

10.  $15 = a \cdot b^8$  and  $11 = a \cdot b^5 \rightarrow y = 6.560(1.109)^x$

11.  $4000 = 1000(1+r)^{10} \rightarrow 14.870\%$

12.  $y = 1250(1.0475)^8 \rightarrow \$1811.93$

13.  $f(x) = \frac{3}{10}(2)^x$

14. a.  $x = 1.76, x = 30^{1/6}$

b.  $x = 25.48, x = 17^{8/7}$

c.  $x = 1.86, x = 78^{1/7}$

d.  $x = 3.13, x = 13^{4/9}$

### Chapter 5B

1. a.  $f(x) = \log(-x) + 3$     b.  $g(x) = -\log_2(x+2)$     c.  $g(x) = \log_6(x-2) - 3$

2. a.  $w^z = y$     b.  $\log_a c = b$     3. a. 3    b. -3    c. 0    d. 2    e. -2    f. -4

4. a.  $x = 1.167$     b.  $x = -3.203$     c.  $x = \frac{\log 162}{\log 12} - 3; x = -0.953$     d.  $x = \frac{\log 80}{\log 7} + 4; x = 6.252$

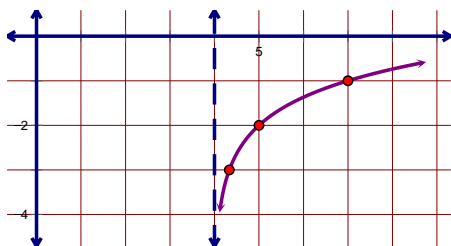
5. a.  $\log_4(3y^2)$     b.  $\log\left(\frac{25}{y^2}\right)$     c.  $\log_x \frac{3}{16}$

6. a.  $\log 5 + 3\log x$     b.  $4\log_3 x - \log_3 5$     c.  $\log 6 + \frac{1}{2}\log x$

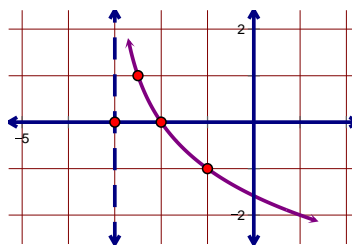
7. a.  $f^{-1}(x) = 7x + 14$     b.  $f^{-1}(x) = \frac{6}{x} + 4$     c.  $y = \frac{(x-8)^2 + 3}{2}$

8. 19    9. 15 years    10.  $f(x) = 2000(1.075)^x$ ; in 18.276 years

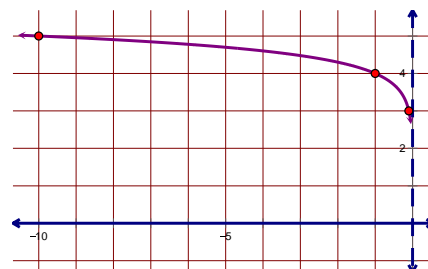
11. a.



b.

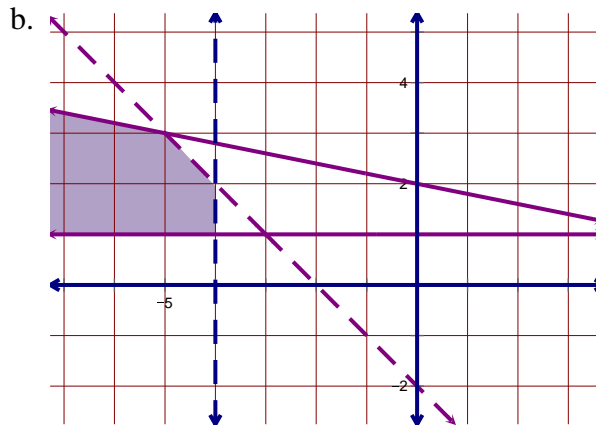
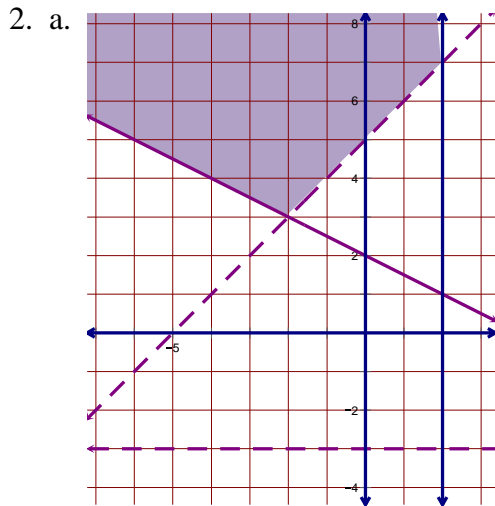


c.



## Chapter 6

1. a.  $\left(\frac{19}{5}, \infty\right)$    b.  $(-\infty, \frac{5}{9}]$    c.  $[-5, 2]$    d.  $(-\infty, -5] \cup [13, \infty)$    e.  $(-\infty, -2) \cup (8, \infty)$   
f.  $\left(-\infty, \frac{-3}{2}\right) \cup \left(\frac{5}{2}, \infty\right)$    g.  $[-13, 13]$    h.  $\left(-\infty, \frac{-17}{3}\right) \cup (-3, \infty)$



3. The farmer should plant 30 acres of corn and 30 acres of beans to maximize the profit at \$34,950.  
4. They should make 0 oak desks and 20 walnut desks to maximize the profit at \$10,200.