

## Math 1160 – Section 11.1 Answer Key

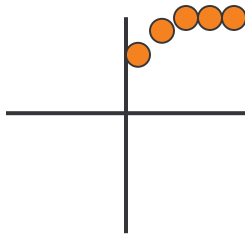
2.  $a = -3, b = 16, b/(1-a) = 16/(1 - -3) = 16/4 = 4$

4.  $a = 1/3, b = 4, b/(1-a) = 4/(1 - 1/3) = 4/(2/3) = 6$

6.  $a = .5, b = -4, b/(1-a) = -4/(1 - .5) = -4/.5 = -8$

8a.  $y_0 = 2, y_1 = 6, y_2 = 8, y_3 = 9, y_4 = 9.5$

8b.



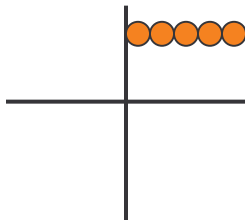
Points (0, 2) (1, 6) (2, 8) (3, 9) (4, 9.5)

\*\*The value of  $n$  becomes your  $x$  coordinate.  
The value of  $y_n$  becomes your  $y$  coordinate.

8c.  $y_n = 10 + (-8)(.5)^n$

10a.  $y_0 = 8, y_1 = 8, y_2 = 8, y_3 = 8, y_4 = 8$

10b.



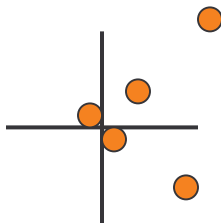
Points (0, 8) (1, 8) (2, 8) (3, 8) (4, 8)

\*\*The value of  $n$  becomes your  $x$  coordinate.  
The value of  $y_n$  becomes your  $y$  coordinate.

10c.  $y_n = 8$  (constant graph)

12a.  $y_0 = 1/2, y_1 = -1, y_2 = 2, y_3 = -4, y_4 = 8$

12b.



Points (0, 1/2) (1, -1) (2, 2) (3, -4) (4, 8)

\*\*Notice the points are oscillating and being repelled from  
from the line  $y = 0$ .

12c.  $y_n = (1/2)(-2)^n$  In this equation,  $b/(1-a) = 0$

20.  $y_n = 1.05y_{n-1} + 100, y_0 = 1000$

25a.  $y_n = 1.04y_{n-1} + 250, y_0 = 800$

25b.  $y_n = -6250 + 7050(1.04)^n$

25c.  $y_7 = -6250 + 7050(1.04)^7 \rightarrow \$3027.32$

**26.** Difference Equation is  $y_n = 1.10y_{n-1} - 100$

\*Each value of  $n$  is a new compounding period. In this situation,  $n$  represents years. To calculate your new balance on the loan (this year), take the **old balance** (last year), **add the interest** (compounding period interest times prior balance), and **subtract the payment**.

$$y_1 = 1.10(y_0) - 100 \rightarrow 1.10(317) - 100 \rightarrow 248.70$$

$$y_2 = 1.10(y_1) - 100 \rightarrow 1.10(248.70) - 100 \rightarrow 173.57$$

**27a.**  $y_n = 0.85y_{n-1}$ ,  $y_0 = 20000$

**27b.**  $y_n = (20000)(0.85)^n$

**27c.**  $y_5 = (20000)(0.85)^5 \rightarrow \$8874.11$