1. Determine whether each function is linear, exponential or quadratic

   1. $y = 6^x + 3$ _____

   2. $y = 7x^2 + 5x - 2$ _____

   3. $9x + 3 = y$ _____

   4. $4^{2x} = 8 + y$ _____

   5. $2x + 3y = 10$ _____

   6. $(x-2)(x+4) = 10$ _____

   7. $y = 3^x + 4$ _____

2. Place each function into the correct box

   $y = 2x(x + 3) - 5$        $y = 5x + 1$        $y = x^2 + 9$        $y = 5^{2x}$        $y = \frac{x}{2}$
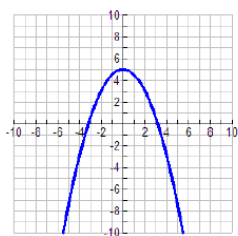
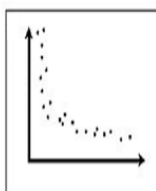   $2x + 3y = 6$        $4^x + y = 13$        $x^2 + 4y = 7$        $y = 2(3)^{x-1}$

   | Linear | Exponential | Quadratic |
   |--------|-------------|-----------|
   |        |             |           |

3. Identify from each graph whether it is linear, exponential or quadratic

   A.                               B.                               C.
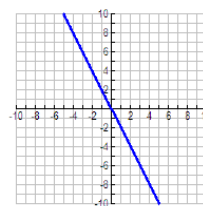
   

   _____        _____        _____

4. Based on each table, determine whether the function is linear, exponential or quadratic. Justify using differences or ratios.

   A.

   | x | y |
   |---|---|
   | 1 | 5 |
   | 2 | 9 |
   | 3 | 13 |
   | 4 | 17 |
   | 5 | 21 |

   B.

   | x | y |
   |---|---|
   | 1 | 0 |
   | 2 | -1 |
   | 3 | 0 |
   | 4 | 3 |
   | 5 | 8 |

   C.

   | x | y |
   |---|-----|
   | 1 | 3 |
   | 2 | 9 |
   | 3 | 27 |
   | 4 | 81 |
   | 5 | 243 |

   D.

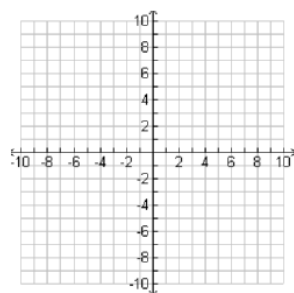   | x | y |
   |----|----|
   | -4 | 19 |
   | -3 | 12 |
   | -2 | 7 |
   | -1 | 4 |
   | 0 | 3 |

**5.** Plot each set of points and determine if it is linear, exponential or quadratic.
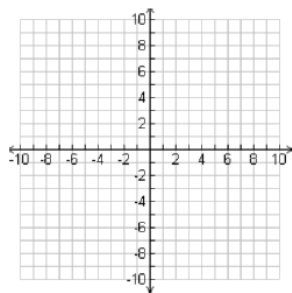
A.  (-1, 0), (0, -3), (1, -4), (2, -3), (3,0)        B.  (-2, .75), (-1, 1.5), (0, 3), (1, 6), (2, 12)



**6.**

Consider the three scenarios given. Match each with the corresponding function, graph, and table.

a. Juanita is driving home from her vacation spot at a constant rate. Which function, graph, and table represent her distance from home as a function of the number of hours she has traveled? Explain your reasoning.

b. A mechanic drops a wrench from a flying helicopter. Which function, graph, and table represent the height of the wrench above the ground as a function of the time since it was dropped? Explain your reasoning.
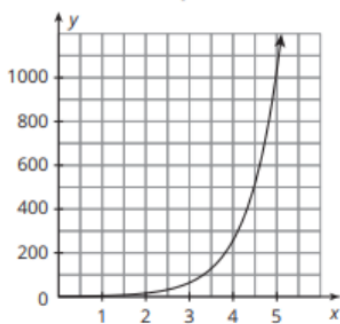
c. Scientists watch as a single cell divides into 4 cells over the course of an hour. During the next hour, each of the 4 new cells divides into 4 cells and the process continues. Which function, graph, and table represent the total number of cells as a function of time? Explain your reasoning.
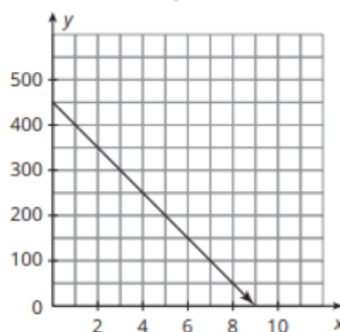
$$f(x) = -16x^2 + 1900 \qquad g(x) = 4^x \qquad h(x) = -50x + 450$$
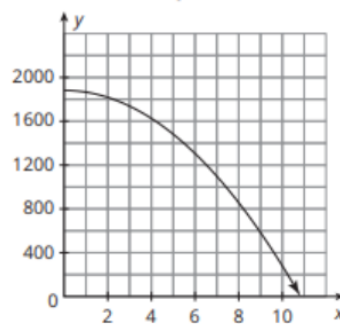
**Graph 1**          **Graph 2**          **Graph 3**



**Table 1**

| x | y |
|---|---|
| 0 | 1 |
| 1 | 4 |
| 2 | 16 |
| 3 | 64 |
| 4 | 256 |

**Table 2**

| x | y |
|---|---|
| 0 | 1900 |
| 2 | 1836 |
| 4 | 1644 |
| 6 | 1324 |
| 8 | 876 |

**Table 3**

| x | y |
|---|---|
| 0 | 450 |
| 2 | 350 |
| 4 | 250 |
| 6 | 150 |
| 8 | 50 |

Situation a:

Situation b:

Situation c: