1. What is the domain and range of the function described by the set of points: \{(3,5), (2,6), (-5,3), (-7,1), (2,6)\}

   Domain: \{-7, -5, 2, 3, 5, 6\}  
   Range: \{1, 3, 5, 6\}

2. Given \(f(x) = \frac{1}{2}x + 6\) and its domain is described by the set \{6, -8, 4, 2\} what is the range?

   \[
   f(6) = \frac{1}{2}(6) + 6 = 3 + 6 = 9 \\
f(-8) = \frac{1}{2}(-8) + 6 = -4 + 6 = 2 \\
f(4) = \frac{1}{2}(4) + 6 = 2 + 6 = 8 \\
f(2) = \frac{1}{2}(2) + 6 = 1 + 6 = 7 \\
   \]

   Range: \{2, 7, 8, 9, 3\}

3. Given \(f(x) = 2x - 1\) and its range is described by the set \{5, -3, 1, 9\} what is the domain?

   \[
   \begin{align*}
   2x - 1 &= 5 & 2x - 1 &= -3 & 2x - 1 &= 1 \\
   2x &= 6 & 2x &= 2 & 2x &= 2 \\
   x &= 3 & x &= 1 & x &= 1 \\
   \end{align*}
   \]

   Domain: \{-1, 1, 3, 5\}

4. Describe the domain and range and label the x and y - intercepts on the graphs of the following graphed functions:

   A.  
   B.  
   C.  
   D.  
   E.  
   F.  

   - A: Domain: All Reals (IR), Range: \(y \geq -3\)  
   - B: Domain: All Reals (IR), Range: \(y > 1\)  
   - C: Domain: \(x < -2\) or \(x \geq 0\), Range: \(y \leq 3\)  
   - D: Domain: All Reals (IR), Range: All Reals (IR)  
   - E: Domain: \(x \geq -2\), Range: \(y \geq 1\)  
   - F: Domain: \(x < 3\) or \(x > 3\), Range: \(y < 2\) or \(y > 2\)
5. Determine which of the following variables are DISCRETE and which are CONTINUOUS.

a. The variable \( x \) represents the number of friends a person has on their Facebook account.

b. The variable \( x \) represents the number of questions a student missed on a test.

c. The variable \( x \) represents the amount of time it takes a student to complete the test.

d. The variable \( x \) represents the height of a student.

e. The variable \( x \) represents the value of the money each student has with them in class.

f. The variable \( x \) represents the weight of a package sent at the post office.

g. The variable \( x \) represents the number of packages delivered at a post office on a given day.

6. Describe the domain and range of each function below as DISCRETE or CONTINUOUS.

7. Find the x and y-intercepts of the following functions.

A. \( f(x) = \frac{1}{2}x + 6 \)

B. \( g(x) = 3^x - 9 \)

C. \( h(x) \) (table of values given)

Assume \( h(x) \) is continuous and has a domain of all real numbers.
8. A postal company delivers packages based on their weight but will not ship anything over 50 pounds. The company charges $0.50 per pound to deliver the package anywhere in the United States. If we consider this situation a function where the number of pounds, \( x \), is the independent variable and the cost in dollars, \( y \), is the dependent variable determine the domain and range.

\[
f(x) = 0.50x
\]

\[
\begin{align*}
\text{Min} & \rightarrow f(0) = 0.50(0) = 0.00 \\
\text{Max} & \rightarrow f(50) = 0.50(50) = 25.0
\end{align*}
\]

Domain: \(0 < x \leq 50\)
Range: \(0 < y \leq 25\)

9. A limousine company rents their limousine by the hour. The company charges $85 per hour. The minimum time is 2 hours and a maximum of 12 hours. If we consider this situation a function where the number of hours, \( x \), is the independent variable and the cost in dollars of renting the limousine, \( y \), is the dependent variable determine the domain and range.

\[
f(x) = 85x
\]

\[
\begin{align*}
\text{Min} & \rightarrow f(2) = 85(2) = 170 \\
\text{Max} & \rightarrow f(12) = 85(12) = 1020
\end{align*}
\]

Domain: \(2 \leq x \leq 12\)
Range: \(170 \leq y \leq 1020\)

10. A student is growing a bean plant outside for a science project. The plants grow for 12 weeks before reaching their maximum height. The student consider the week she started growing the plant to be week 0 and then realized that the plant closely followed the function model \( h(x) = 1.5 \cdot (1.2)^x \), where \( x \) represents the number of weeks grown and \( h(x) \) represents the height of the plant in inches. Using the function model describe the appropriate domain and range.

\[
h(x) = 1.5 \cdot (1.2)^x
\]

\[
\begin{align*}
\text{Min} & \rightarrow h(0) = 1.5 \cdot (1.2)^0 = 1.5 \\
\text{Max} & \rightarrow h(12) = 1.5 \cdot (1.2)^{12}
\end{align*}
\]

Domain: \(0 \leq x \leq 12\)
Range: \(1.5 \leq y \leq 13.37\)

11. A vending company realized a relationship between the number of people present at the stadium during a Braves game and the number of hot dogs they sold. The minimum attendance due to players and support staff is 361 people and the maximum people that could be at the stadium is 86,436 people. The relationship that describes the number of hot dogs sold very closely followed the function model \( h(x) = 15 \cdot \sqrt{x} \) where \( x \) represents the number of people at the stadium and \( h(x) \) represents the number of hot dogs sold. What is the domain and range of the model?

\[
h(x) = 15 \cdot \sqrt{x}
\]

\[
\begin{align*}
\text{Min} & \rightarrow h(361) = 15 \cdot \sqrt{361} = 285 \\
\text{Max} & \rightarrow h(86436) = 15 \cdot \sqrt{86436} = 4410
\end{align*}
\]

Domain: \(361 \leq x \leq 86436\)
Range: \(285 \leq y \leq 4410\)

12. An author is selling autographed copies of his book at a stand in a bookstore in the mall and charging $12 per copy. The author bought a total of 40 books with him to sell at his stand. If the function \( p(x) = 12x \) represents the gross profit the author could make during the time he is sitting at the stand, determine the appropriate domain and range.

\[
p(x) = 12x
\]

\[
\begin{align*}
\text{Min} & \rightarrow p(0) = 12(0) = 0 \\
\text{Max} & \rightarrow p(40) = 12(40) = 480
\end{align*}
\]

Domain: \(0 \leq x \leq 40\)
Range: \(0 \leq y \leq 480\)