1. Let $f(x) = |x|$ and $g(x) = |x - 2| + 3$
    a. Describe the transformation of $g(x)$ from the parent function $f(x) = |x|$

    b. Graph both $f(x)$ and $g(x)$ on the coordinate axis below.
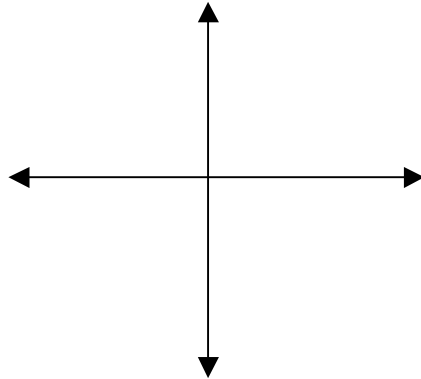
2. When a pan of tater tots is first removed from the oven, its temperature T is 400°F. After 2 hours its temperature is approximately 100°F.
    a. Write two ordered pairs, where x represent the time in hours since the tater tots were removed from the oven, and y represents the temperature of the tater tots at that time.

    b. Find the rate of change (slope) of the temperature of the tater tots from when they are first removed from the oven to 2 hours later.

    c. Write a function T(t) that would model the tater tots temperature T at any time t.

    d. What is the approximate temperature of the tater tots after 1.5 hours?

3. As you drive home from the basketball game, the number of miles you are away from home depends on the number of minutes you have been driving. Assume that the distance varies linearly with time. Suppose you are 20 miles from home when you have been driving for 10 minutes, and 18 miles from home when you have been driving for 15 minutes.

   a. Write a linear equation expressing the number of miles you are from home (d) in terms of the number of minutes since you left the game (t).

   b. Predict your distance from home after driving for 20 min., 25 min., and 30 min.

   c. When were you are 8 miles from home, how many minutes have you been traveling?

   d. Find the distance-intercept. What does this number represent in the real world?

   e. Find the time-intercept. What does this number represent in the real world?

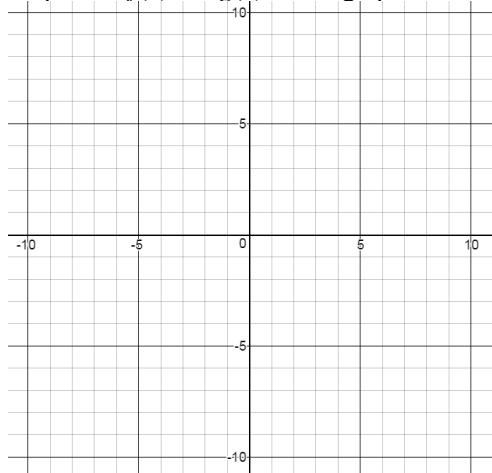   f. Plot the graph of this linear function. What is the domain and range?

   Distance in Miles

   Time in minutes

   g. What is the slope? What does this number represent? Is it logical to have a negative slope?

4. Let $f(x)|x - 2| - 3$ and $g(x) = \frac{1}{2}x - 1$

    a. Graph both $f(x)$ and $g(x)$ on the graph below

    b. Using the graph above, solve the following equation: $|x - 2| - 3 = \frac{1}{2}x - 1$. Justify your answer.

5. Use the spreadsheets below showing the monthly income and monthly expenses for a new business.

Month	Income
1st Month	$400
2nd Month	$600
3rd Month	$800
4th Month	$1000

Month	Expenses
1st Month	$2400
2nd Month	$2000
3rd Month	$1600
4th Month	$1200

    a. Write a linear model to represent the monthly income.

    b. Write a linear model to represent the monthly expenses.

    c. Use the two models to estimate the month in which income will equal expenses. Round your answer to the nearest month.

Given $f(x) = 16x^2 - 1$ and $g(x) = 4x - 1$, find each function or value.

6. $f(x) - g(x) =$

7. $f(x) \cdot g(x) =$

8. $f(x) \div g(x) =$

9. $g(f(-2)) =$

10. $f(g(x)) =$

11. $g(f(1)) =$

12. $g^{-1}(x) =$