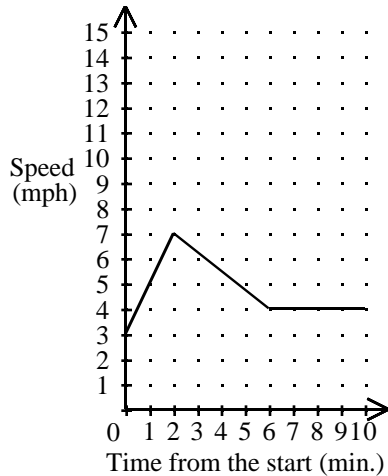


Math 105 Exam #2

Describe the motion of the bike rider indicated in the speed versus time graph.



Consider functions $f = \{(-1,3), (0,4), (5,-2), (8,9)\}$ and $g = \{(0,2), (1,-3), (5,0), (9,3)\}$.

- Find the domain and range of f .
- Find the domain and range of g .
- Find the values of $f(0)$, $f(8)$, $g(0)$ and $g(5)$.
- Find the values of $(f+g)(0)$ and $(f+g)(5)$.
- Find the domain and range of $f+g$.

Ivan Bogdanovich plans to decorate dolls to sell at a crafts fair. The decorations cost \$34.50 and the dolls cost \$5.75 each.

- Write a function expressing the cost, $C(x)$, of the project in terms of the number of dolls decorated, x .
- Determine the cost of decorating 25 dolls.
- How many dolls can be decorated with a budget of \$235.75?

Find the value of the second coordinate of the point $(-5, y)$ if the slope of the line through that point and $(3, -8)$ is $-3/4$.

Use the point-slope form to find the equation of a line through the points $(2, 6)$ and $(-5, -7)$, then write the equation in function form.

Find the equation of a line with the properties given. Write the equation in the form indicated. Through $(-4, 2)$ perpendicular to $y = -4x - 3$ (standard form)

A line goes through the point $(a, -b)$ where a and b are positive numbers. If the line does not go into the first quadrant what is the smallest slope that the line may have?

Let $f(x) = 3x - 2$ and $g(x) = 2x + 5$ and let $h(x) = \frac{f(x+1) - f(x-1)}{g(x+3)}$.

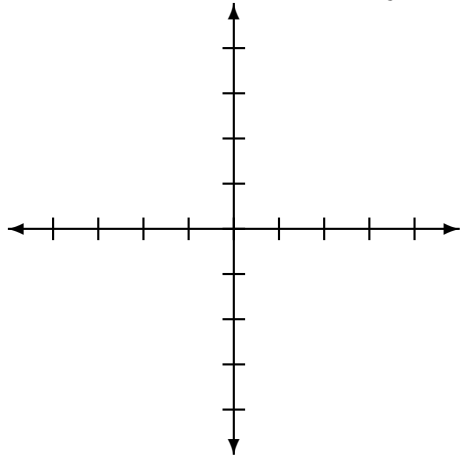
Simplify $h(x)$ and state its domain.

Solve the system of equations using the addition method. $4x = 5y - 19$
 $4y = 5x + 17$

A solution of 52% vinegar is to be mixed with a solution of 29% vinegar to form 69 liters of a 43% solution. How many liters of the 52% solution must be used?

During a public ice skating session, an ice skating arena charged an admission fee for each child plus a rental fee for each pair of ice skates. Nelson Miller paid the admission fees for his 5 nephews and rented 4 pairs of ice skates. He was charged \$39.75. Bernice Woods paid the admission fees for her 7 grandchildren and rented 5 pairs of ice skates. She was charged \$53.25. What was the admission fee? What was the skate rental fee?

Graph the function $g(x) = \frac{2}{3}x + 2$.



Find the equation (in slope-intercept form) of the line through $(4, -7)$ and the x -intercept of $x - 3y = 4$.

If a line passes through $(-4, 3)$ and has slope $\frac{3}{8}$, then find another point on the line.

At Harold's Chicken Shack the demand for a chicken sandwich is based on the price that it sells. If the price is \$1.00 then 530 sandwiches are sold. If the price is \$2.00 then 400 sandwiches are sold. Find a linear function expressing the demand for chicken sandwiches in terms of the price. Then use it to determine what the price should be if they want to sell 500 sandwiches.

Solve the system of equations:

$$\frac{2x - 5y}{10} = 4$$
$$2x - 8 = 3y$$

Let $f(x) = 3x - 4$.

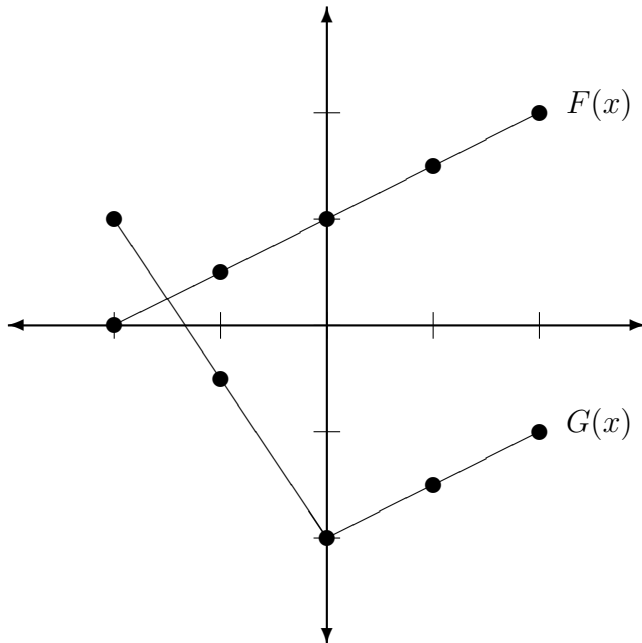
i) Find $f(x + 2)$

ii) Find and simplify $f(x + 2) - f(x)$

Find the function $f(x)$ whose graph is a line if $f(4) = 5$ and the line is perpendicular to the line $y - 2x = 4$.

Let $f(x) = 3x - 5$ be the function with domain $\{-2, 0, 3\}$. Find the range of $f(x)$.

The graphs of $F(x)$ and $G(x)$ are shown. Find $(F - G)(2)$ and $(FG)(0)$.



Two cars start at the same city and travel in opposite directions. One car travels 5 miles per hour faster than the other car. After 4 hours the cars are 420 miles apart. Find the speed of each car.

Find the point of intersection of the following lines:

$$2x = 7y + 3$$

$$-5x + 3y = 7$$

How much pure acid should be added to 5 gallons of a 40% acid solution to increase its strength to 50% acid?

Find k such that the points $(5, k)$ and $(-1, 4)$ are on a line with slope $-\frac{2}{3}$.

Find the function $L(x)$ that is graphed below (each tick-mark is one unit):

