

1. For the function  $f(x) = \frac{3x - 1}{x^2 - 4}$ ,

- (a) Find  $f(-1)$
- (b) Find the domain.

2. The height  $h$ , in feet, of fireworks,  $t$  seconds after being launched is given by

$$h(t) = -16t^2 + 80t + 224$$

What is the domain of the function?

3. Given the function

$$G(x) = \begin{cases} 2x & \text{if } x \leq -2 \\ x + 3 & \text{if } -2 < x \leq 1 \\ -5x + 1 & \text{if } x > 1 \end{cases}$$

what is the value of  $G(0)$ ?

4. Sketch the graph of the following.

(a)  $y = \frac{-3x}{4} + 2$

(b)  $x - 2y = 4$

(c)  $y = 4$

(d)  $x = 2$

5. In 1994, the life expectancy of males was 72.4 years. In 2004, the life expectancy of males was 75.2 years. Let  $E(t)$  represent life expectancy and  $t$  the number of years since 1990.

- (a) Find a linear function that represents the data.
- (b) Use part(a) to estimate the life expectancy of males in 2012.

6. Solve the formula  $ax + b = cx$  for  $x$ .

7. Solve the formula  $\frac{v_2 - v_1}{t_2 - t_1}$  for  $t_2$ .

8. Solve the formula  $p = \frac{-98.42 + 4.15c - 0.082w}{w}$  for  $w$ .

9. The time  $t$  required to empty a tank varies inversely as the rate  $r$  of pumping. If a pump can empty a tank in 45 minutes at the rate of 600 kL/min, how long will it take to empty the tank at 1000 kL/min? Be sure to use algebra.

10. The stopping distance  $d$  of a car after the brakes have been applied varies directly as the square of the speed  $r$ . Once the brakes are applied,, a car traveling 60 mph can stop in 138 feet. What stopping distance corresponds to a speed of 70 mph? Be sure to use algebra.