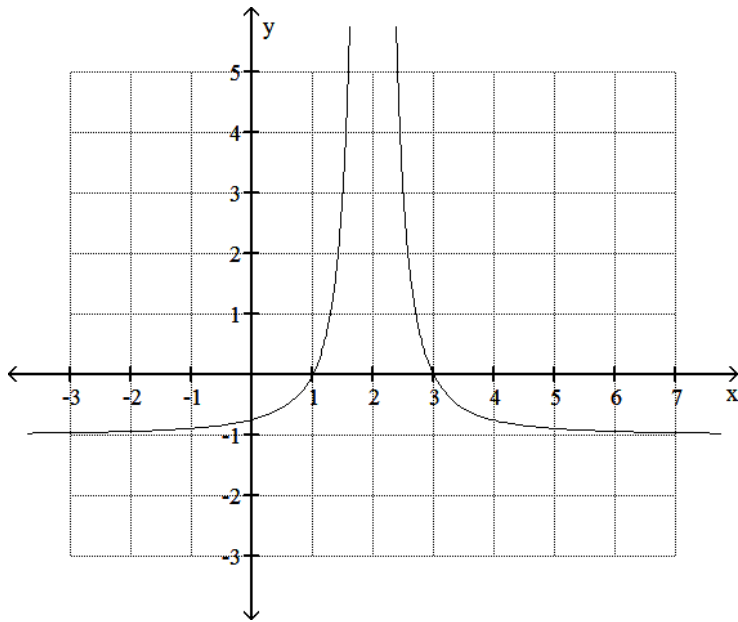


SHORT ANSWER.

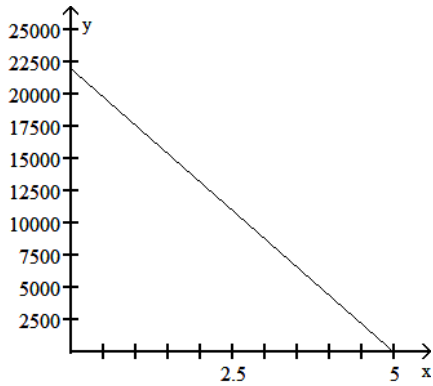
1. Use the graph of the given function to determine each of the following. Where applicable, use interval notation.



- the domain of f
- the value of the zero(s) of f
- the approximate value of $f(0)$
- the equation of the vertical asymptote
- the number $f(x)$ approaches as x approaches infinity
- interval(s) on which f is increasing
- values of x for which $f(x) < 0$
- the value(s) of x for which $f(x) = 3$
- the range of f

2. Solve.

A school has just purchased new computer equipment for \$22,000.00. The graph shows the depreciation of the equipment over 5 years. The point (0, 22,000) represents the purchase price and the point (5, 0) represents when the equipment will be replaced.



a) Write a linear equation in slope-intercept form that models the value of the equipment, y , x years after purchase.

b) Use the model to predict the value of the equipment after 4 years.

c) What is the slope of the line whose equation you found in part (a)? Interpret the slope verbally.

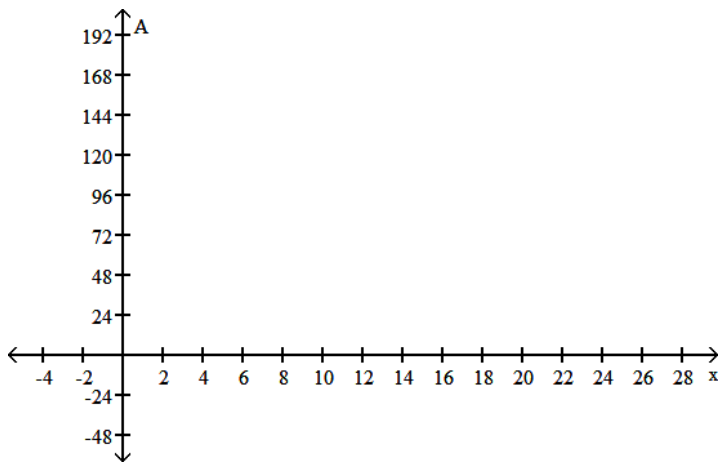
3. Solve.

The perimeter of a rectangle is 48 feet. If x and y are the length and width of the rectangle, $2x + 2y = 48$.

a) Write y in terms of x .

b) Write the area of the rectangle as a function of x .

c) Graph the area function.



d) What is the maximum possible area?

4. Solve.

Medical research indicates that the risk of having a car accident increases exponentially as the concentration of alcohol in the blood increases. The risk is modeled by $R = 6e^{12.77x}$ where x is the blood alcohol concentration and R , given as a percent, is the risk of having a car accident.

a) In many states it is illegal to drive with a blood alcohol concentration of 0.08 or more. What is the risk of having a car accident with a blood alcohol concentration of 0.08?

b) What blood alcohol concentration corresponds to a 20% risk of a car accident?

c. Is the risk of having a car accident ever 0 with this model?

d) What is the risk if a driver's blood alcohol concentration is zero?