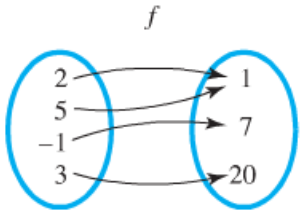
**3.6 In-class Practice** Math 085

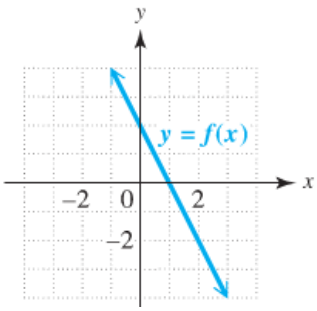
1. *Choose the correct response:* The notation $f(3)$ means
   a) the variable $f$ times 3, or $3f$.
   b) the value of the dependent variable when the independent variable is 3.
   c) the value of the independent variable when the dependent variable is 3.
   d) $f$ equals 3.

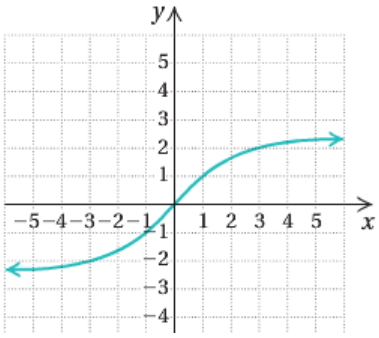
2. Give an example of a function from everyday life.
   _____depends on _____ , so _____ is a function of _____ .

3. Let $f(x) = -3x + 4$ and $g(x) = -x^2 + 4x + 1$. Find the following.
   a) $g(0)$ b) $f(-x)$ c) $f(x-1)$
   d) $g(x+h)$ e) $f(1) - g(1)$ f) $f(a+h) - f(a)$

4. For each function, find $f(-1)$.
   a) $f = \{(-2,-1),(-1,3),(2,-3)\}$ b) $f(x) = x^2 - x - 2$
   c)
   
   
   d)

| $x$ | $y = f(x)$ |
|---|---|
| 2 | 4 |
| 1 | 1 |
| 0 | 0 |
| −1 | 1 |
| −2 | 4 |

   e)
   
   

5. For each function, find all $x$-values such that $f(x) = 2$.
   a) $f = \{(2,0),(-1,2),(-3,2)\}$ b) $f(x) = 3x - 1$
   c)
   
   
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   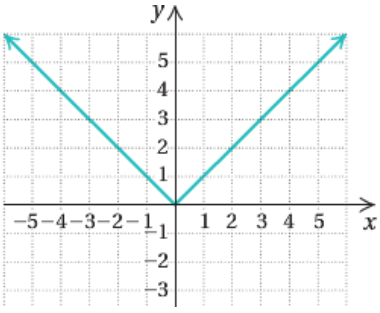
   
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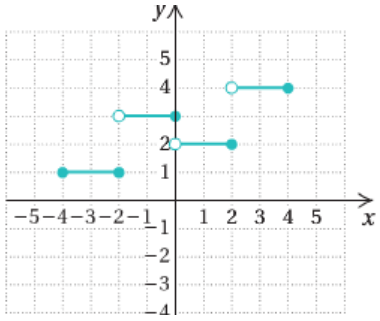
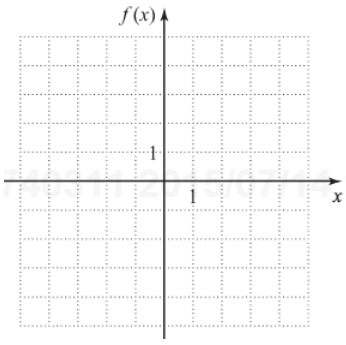
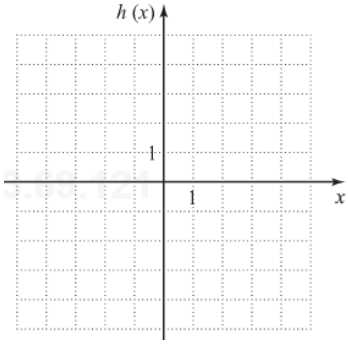
   
   

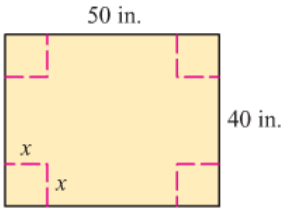
6. *Fill in each blank.* The equation $2x + y = 4$ has a straight _____ as its graph. One point that lies on the graph is $(3, \_\_)$ . If we solve the equation for $y$ and use function notation, we obtain $f(x) =$ _____. For this function, $f(3) =$ ____, meaning that the point $(\_\_, \_\_)$, lies on the graph of the function.

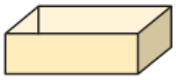
7. Graph each function.
   Then identify its domain and range.
   a) $f(x) = \frac{3}{2}x + 4, \ for \ x \geq -4$
   b) $h(x) = |x + 1|, \ for \ x \geq -2$



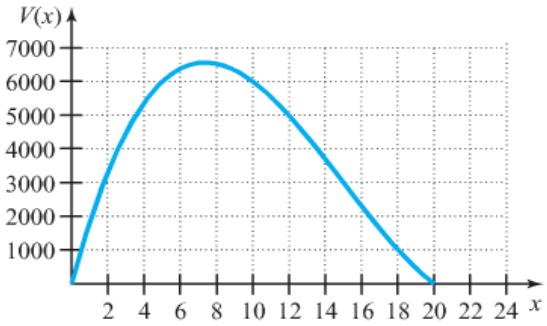



8. A box manufacturer makes open boxes by cutting $x$-in. by $x$-in. squares from each corner of a 50-in. by 40-in. piece of cardboard.
The volume of the box is given by the function $V(x) = 4x^3 - 180x^2 + 2000x$.



a) Use the given graph to find $V(5)$ and $V(15)$.



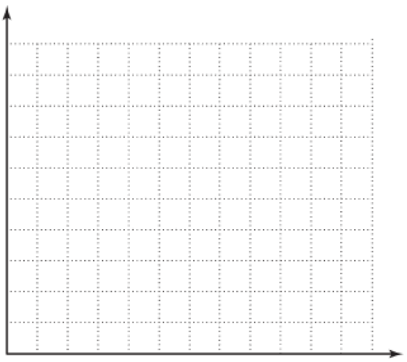

b) Is it reasonable to consider values of $x > 20$ in this situation? Explain.

9. A patient's weekly dosage of 500 mg of a medication is reduced by 50 mg per week.

a) Express in function notation the relationship between the patient's weekly dosage $d(x)$ and the number of weeks $x$.

b) Find $d(2)$ and interpret its meaning in this situation.

c) Graph the function in part a).



d) For what value of $x$ we can say that $d(x) = 100$? Interpret your answer in the context of the problem.