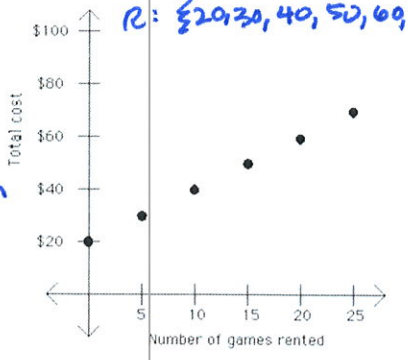
MAT 011, Functions and Relations (3.6) Name KEY

1. Find the domain and range of each relation. Is the relation a function?
   a. $\{(2,4),(0,0),(-7,10),(10,-7)\}$ D: $\{2,0,-7,10\}$ R: $\{4,0,10,-7\}$ yes it's a function
   b. $\{(0,-2),(1,-2),(5,-2)\}$ D: $\{0,1,5\}$ R: $\{-2\}$ yes, it's a function
   c. $\{(11,6),(-1,-2),(0,0),(3,-2)\}$ D: $\{11,-1,0,3\}$ R: $\{6,-2,0,-2\}$ yes, it's a function
   d. $\{(1,2),(3,2),(1,4)\}$ D: $\{1,3\}$, R: $\{2,4\}$ no, it is not a function

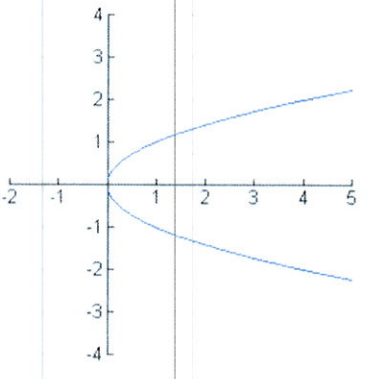
2. Find the domain and range of each relation. Is the relation a function?

a. D: $\{0,5,10,15,20,25\}$
R: $\{20,30,40,50,60,70\}$



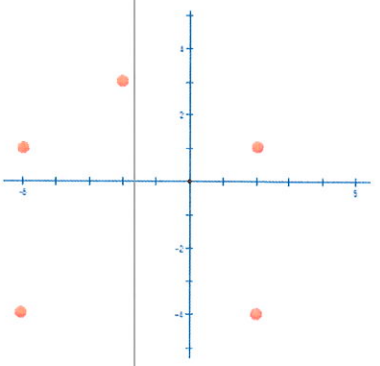
function

c.



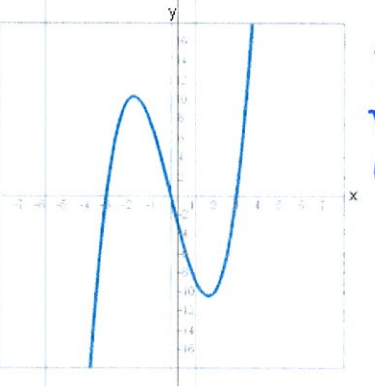
not a function
D: $[0,\infty)$
R: $(-\infty,\infty)$

b.



not a function
D: $\{-5,-2,2\}$
R: $\{-4,1,3\}$

d.



function
D: $(-\infty,\infty)$
R: $(-\infty,\infty)$

3. Does the equation describe a function?
   a. $y = x + 1$ yes
   b. $y = 6$ yes
   c. $x = y^2$ no
   d. $2x - 3y = 9$ yes
   e. $x = 3$ no
   f. $y = x^2 - 3$ yes

4. Find $f(-2), f(0), f(3)$ for each function.

a. $f(x) = 2x - 5$ $f(-2) = 2(-2) - 5 = -9$ $f(0) = -5$, $f(3) = 2(3) - 5 = 1$

b. $f(x) = x^2 + 2$ $f(-2) = (-2)^2 + 2 = 6$ $f(0) = 2$ $f(3) = 3^2 + 2 = 11$

c. $f(x) = |2 - x|$ $f(-2) = |-2 - (-2)| = 0$ $f(0) = |2| = 2$ $f(3) = |2 - 3| = 1$

d. $f(x) = -x^2 + 2x - 6$ $f(-2) = -(-2)^2 + 2(-2) - 6 = -4 - 4 - 6 = -14$
$f(0) = -6$ $f(3) = -(3)^2 + 2(3) - 6 = -9 + 6 - 6 = -9$

5. Give the point on the graph.

a. $f(3) = 6$ $(3, 6)$

b. $g(0) = -\frac{1}{2}$ $(0, -\frac{1}{2})$

c. $h(-2) = 9$ $(-2, 9)$

d. $r(6) = 11$ $(6, 11)$

6. Find the domain of each function.

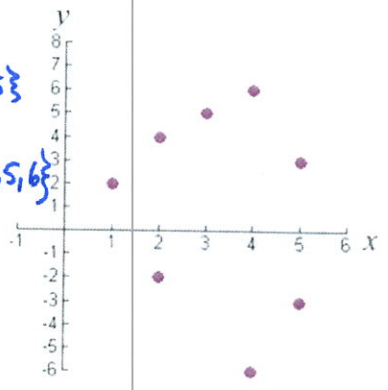
a. $f(x) = 3x - 7$ $(-\infty, \infty)$

b. $h(x) = \frac{1}{x+5}$ $x \neq -5$ or $(-\infty, -5) \cup (-5, \infty)$

c. $g(x) = |x + 1|$ $(-\infty, \infty)$

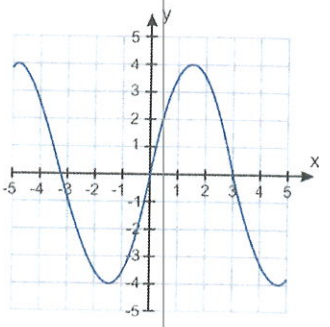
7. Find the domain and range of each function or relation.

a.



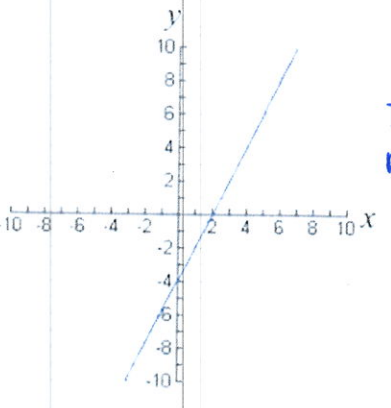
D: $\{1, 2, 3, 4, 5\}$
R: $\{-6, -3, -2, 2, 3, 4, 5, 6\}$

b.



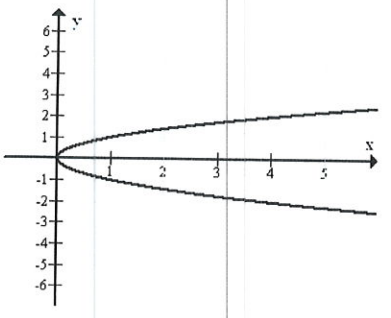
D: $(-\infty, \infty)$
R: $[-4, 4]$

d.



D: $(-\infty, \infty)$
R: $(-\infty, \infty)$

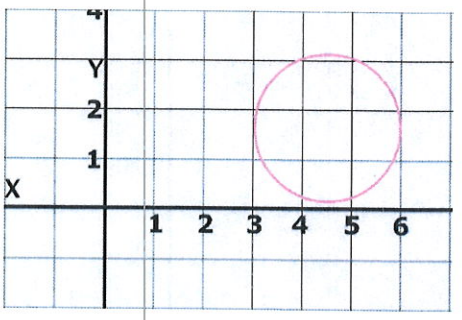
e.



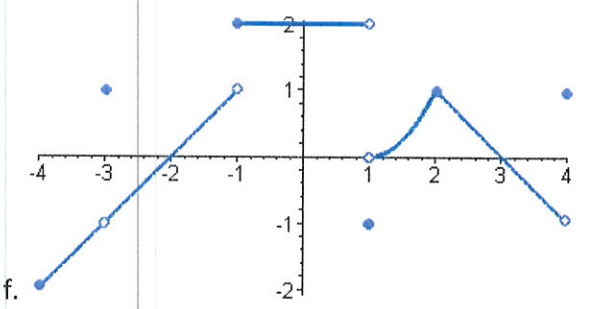
D: $[0, \infty)$
R: $(-\infty, \infty)$

D: [3,6]
R: [0,3]
(approx)

c.



f.



D: [-4,4] R: [-2,1] ∪ {2}

8. Use the graph to find

a. $f(0) =$ 0

b. $f(3) =$ 3

c. $f(x) = 0, x =$ −8, 0, 4

d. $f(x) = 4, x =$ -7.5, -3, 8