1. Consider the function:

What is the range of f?

- a. The integers
- c. The interval [0, 4]
- 2. Consider the relation  $g = \{(1,4), (3,4), (2,1)\}$

Which of the following are true?

a. 
$$g: 3 \mapsto 4$$
  
b.  $g \text{ is } 1\text{-to-}1$   
c.  $g(1) = 2$   
d.  $g(4) \text{ is undefined}$ 

3. Given the function:

$$h(x) = f(g(x)) = \frac{4}{9x^2} + 1$$
  
of f and g  
b.  $f(x) = \frac{4}{x}, g(x) = 9x^2 + 1$   
d.  $f(x) = x^2 + 1, g(x) = \frac{2}{3x}$   
 $\frac{1}{9x^2} + 1$ 

 $f: \mathbb{R} \to \{ y \mid 0 \le y \le 4, y \in \mathbb{Z} \}$ 

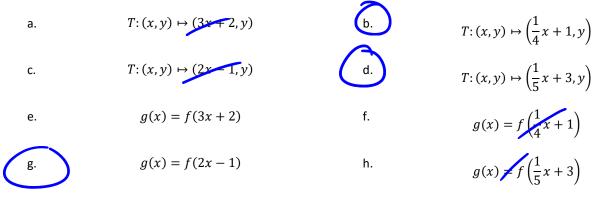
Which of the following functions are valid pairs of f and g

a. 
$$f(x) = \frac{4}{x^2} + 1$$
,  $g(x) = 3x$   
c.  $f(x) = \frac{1}{x^2}$ ,  $g(x) = \frac{3x}{2} + 1$ 

4. If f(2) = 5 and g(5) = 7 then which of the following are true?

a.
$$(f \circ a)(2) = 7$$
b. $(f \circ g)(5) = 5$ c. $(g \circ f)(2) = 7$ d. $(g \circ f)(5) = 5$ 

5. Which of the following expressions shows a horizontal compression AND a shift right?



6. Given the following transformation which is an accurate description of the transformation?

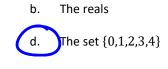
$$T: \mathbb{R}^2 \to \mathbb{R}^2$$
$$T: (x, y) \mapsto \left(-x, \frac{2}{3}y - 5\right)$$

b.

by  $\frac{3}{2}$ , down 5.

- a. Reflected over the *x*-axis, vertically compressed by  $\frac{3}{2}$ , down 5.
- c. Reflected over the *x*-axis, vertically expanded by  $\frac{3}{2}$ , up 5
- d. Reflected over the *y*-axis, vertically expanded by  $\frac{3}{2}$ , up 5

Reflected over the y-axis, vertically compressed



7. Which of the following are true about f and  $f^{-1}$ ?

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a) They are reflected over the line 
$$y = x$$
  
b) They are reflected over the line  $y = -x$   
c)  $f(x^{-1}(x)) = x^{2}$   
c)  $f^{-1}(x + 1c^{2})$   
c)

$$Ruy ( [2,8] \rightarrow [-8,-2) \rightarrow [-4,-1] \rightarrow [-7,-4]$$