

I. Functions vs Relations

Relation:

X-Values in the Relation:

Y – Values in the Relation:

[EX 1] { (2, 4), (3, -2), (4, 2), (1, 5), (2, 6), (3, -2), (4, 5), (2, 1) }

Picture Representation:

Domain:

Range:

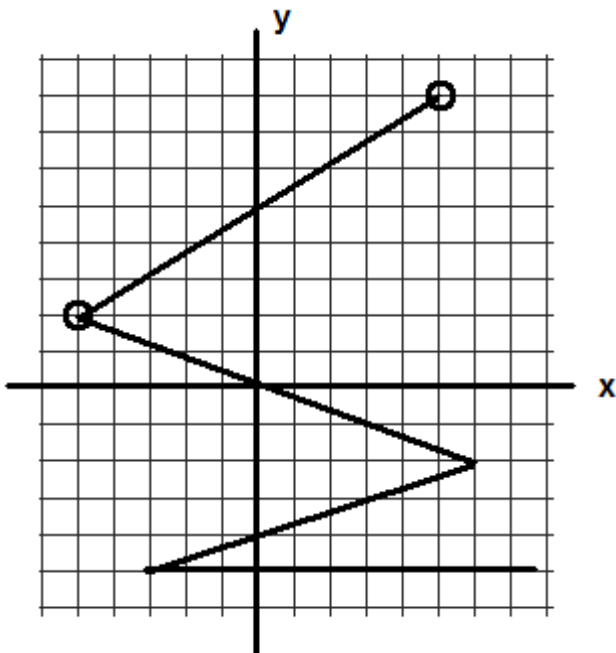
[EX 2] { (0, 0), (-1, -5), (1, -5), (2, 3), (2, -1), (1, 4), (0, 4), (-1, 3) }

Picture Representation:

Domain:

Range:

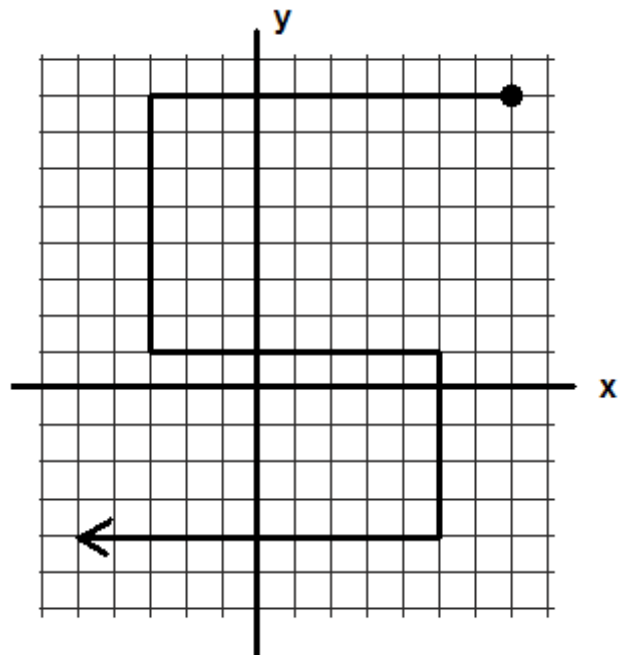
[EX 3]



Domain:

Range:

[EX 4]



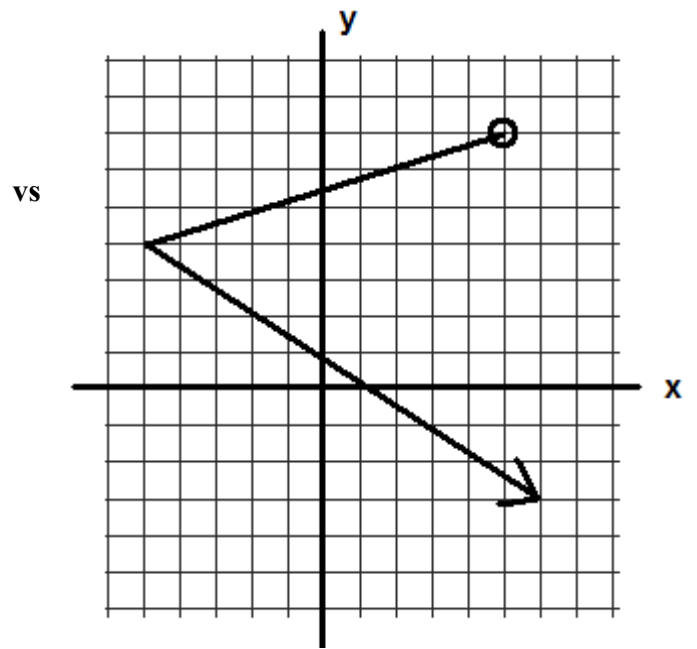
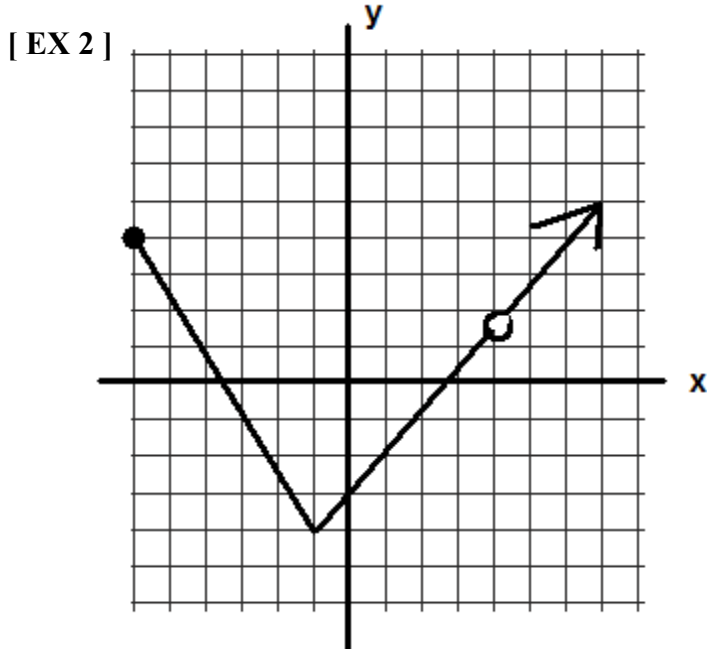
Domain:

Range:

Function:

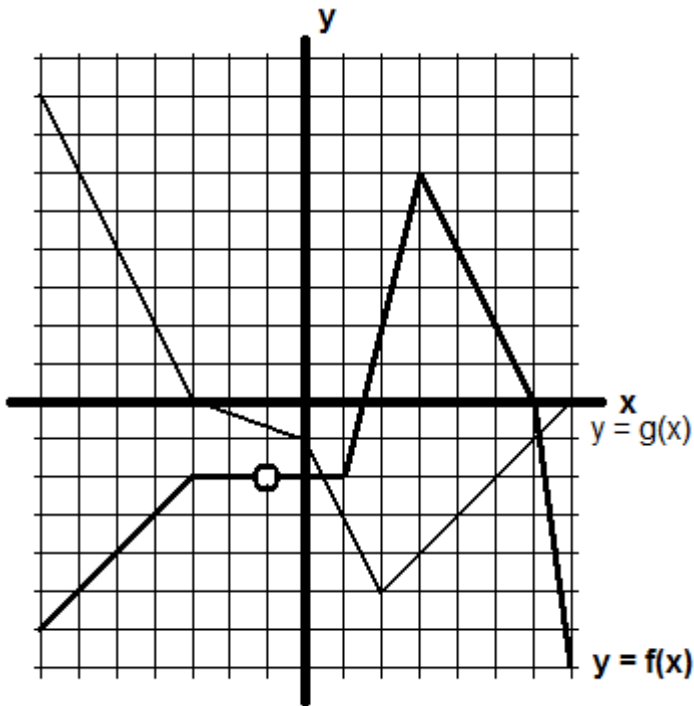
[EX 1] { (2, 3), (-1, 3), (4, 1), (3, 7), (0, 0), (1, 5) } vs { (2, 3), (-1, 3), (4, 1), (2, 1), (3, 7), (-1, 5) }

► **Functions, in picture format,** _____



► **Functions, in graph format,** _____

II. Interpreting Graphs of Functions



Domain of $f(x)$:

Range of $f(x)$:

Domain of $g(x)$:

Range of $g(x)$:

$f(-4) =$

$g(4) =$

$(f \circ g)(2) =$

$(g \circ f)(7) =$

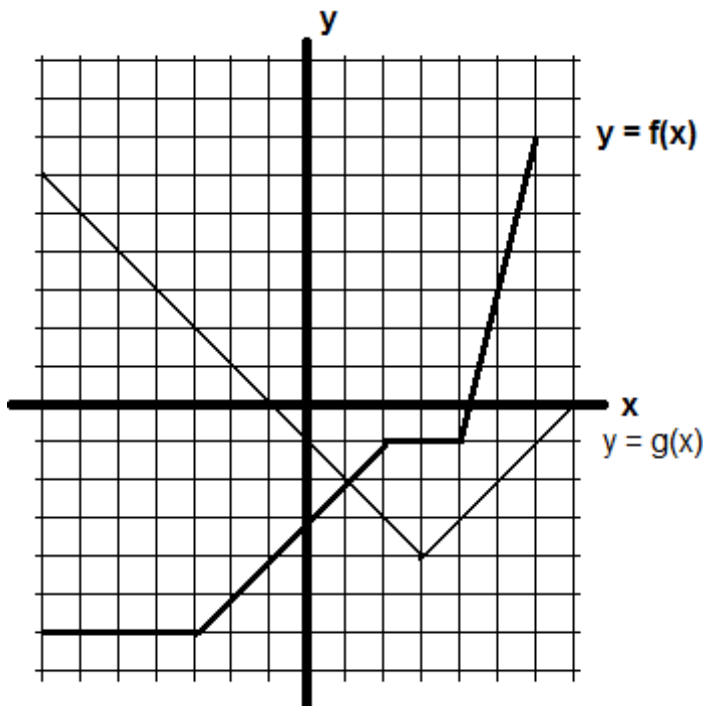
$(f \circ g)(5) =$

$(g \circ f)(-4) =$

$g(x) = -3 \quad x = ?$

$f(x) = 2 \quad x = ?$

$f(x) = 6 \quad x = ?$



Domain of $f(x)$:

Range of $f(x)$:

Domain of $g(x)$:

Range of $g(x)$:

$f(3) =$

$g(0) =$

$(f \circ g)(3) =$

$(g \circ f)(5) =$

$(f \circ g)(-6) =$

$(g \circ f)(2) =$

$g(x) = 2 \quad x = ?$

$f(x) = 3 \quad x = ?$

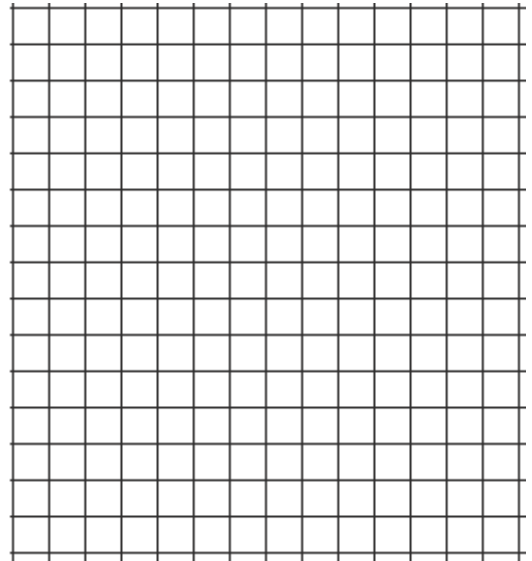
$f(x) = -6 \quad x = ?$

III. Drawing Graphs of Relations and/or Functions

Function

Domain: $(-\infty, -1) \cup (-1, \infty)$

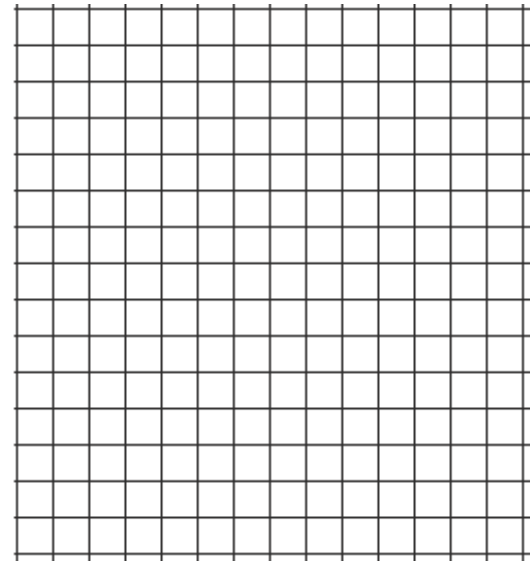
Range: $\{-4, 8\}$



Not a Function

Domain: $[-3, 2) \cup (3, 4) \cup (4, \infty)$

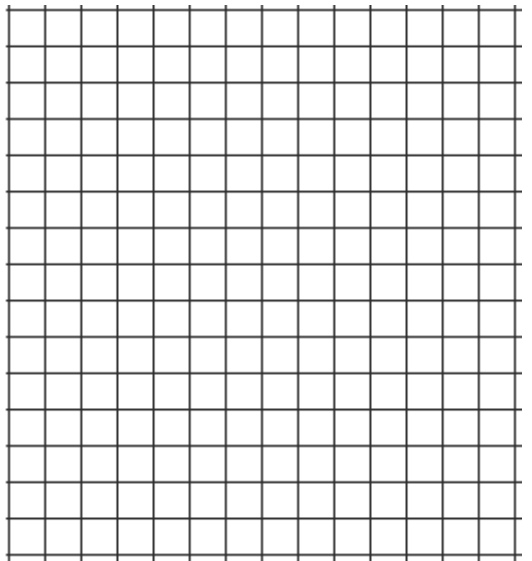
Range: $\{-3, 2, 5\}$



Function

Domain: $[-3] \cup [2, 5)$

Range: $(-1, 4) \cup [-2] \cup [7]$



IV. Finding Domains Algebraically

$$k(x) = \sqrt{2x-5}$$

$$T(x) = \frac{2x-7}{3x+5}$$

$$D(x) = \frac{5}{\sqrt{3-7x}}$$

V. Function Composition Algebraically

$$f(x) = x^2 + 4, \quad g(x) = 3x - 1, \quad h(x) = \sqrt{7-x}$$

$$(f \circ g)(x) =$$

$$(f \circ h)(x) =$$

$$(g \circ f)(x) =$$

$$(h \circ f)(x) =$$

VI. Inverse Functions / Inverse Relations

Find the inverse of the functions below and then calculate the items requested.

$$f(x) = 7 - \frac{x}{5}$$

$$g(x) = \sqrt{x+3} - 4$$

$$(f \circ f^{-1})(2) =$$

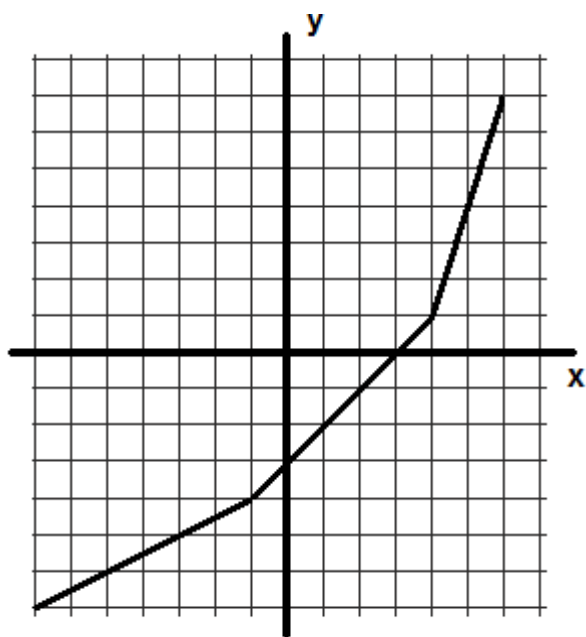
$$(g \circ g^{-1})(6) =$$

$$(f^{-1} \circ f)(2) =$$

$$(g^{-1} \circ g)(6) =$$

Given the graph, draw the inverse. Then answer the questions.

$$y = f(x)$$



$$(f \circ f^{-1})(4) =$$

$$(f^{-1} \circ f)(4) =$$

$$(f^{-1} \circ f)(3) =$$

$$(f \circ f^{-1})(3) =$$

$$(f \circ f^{-1})(-5) =$$

$$(f^{-1} \circ f)(5) =$$