

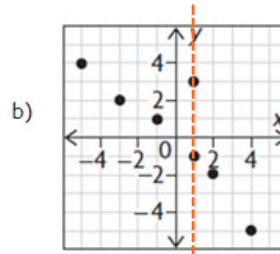
These review lessons should not be considered a comprehensive review of all topics. You should be reviewing ALL of your notes, quizzes, tests, and textbook to prepare for the exam/summative.

Unit I Review - Introduction to Functions

1. State which relations are functions. Explain.

a)  $\{(-3, 2), (-4, 1), (0, 1), (2, 2), (6, 1)\}$

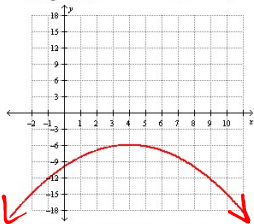
*Function, each x has one y.*



*Not a function, fails vertical line test.*

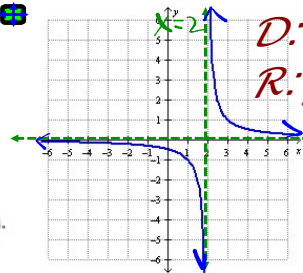
2. Determine the domain and range of each function.

a)  $f(x) = -0.25(x-4)^2 - 6$



*D:  $x \in \mathbb{R}$   
R:  $y \in \mathbb{R}, y \leq -6$*

b)  $f(x) = \frac{1}{-(2-x)}$



*D:  $x \in \mathbb{R}, x \neq 2$   
R:  $y \in \mathbb{R}, y \neq 0$*

3. Determine the inverse,  $f^{-1}(x)$ , of each function.

a)  $f(x) = \frac{x-4}{5}$

*$x = \frac{y-4}{5}$*

*$5x = y - 4$*

*$5x + 4 = y$*

*$f^{-1}(x) = 5x + 4$*

b)  $\{(-8, -5), (-6, 4), (3, 4), (4, 7), (6, -2)\}$

*Inverse =  $\{(-5, -8), (4, -6), (4, 3), (7, 4), (-2, 6)\}$*

4. For  $f(x) = -4x - 6$ , evaluate  $f(2a+3) - f(4-a)$ .

*$$\begin{aligned} &= -4(2a+3) - 6 - [-4(4-a) - 6] \\ &= -8a - 12 - 6 - (-16 + 4a - 6) \\ &= -8a - 18 - (4a - 16 - 6) \\ &= -8a - 18 - (4a - 22) \\ &= -8a - 18 - 4a + 22 \\ &= -12a + 4 \end{aligned}$$*

5. The function  $y = f(x)$  has been transformed to  $y = af[k(x-d)] + c$ . Determine the values of  $a$ ,  $k$ ,  $d$ , and  $c$ .

a) A vertical stretch of factor 4 and a translation of 2 units to the left are applied to  $y = f(x)$ .

$$\therefore a = 4$$

$$k = 1$$

$$d = -2$$

$$c = 0$$

$$y = 4f(x+2)$$

b) A horizontal stretch of factor  $\frac{1}{2}$ , a reflection in the  $x$ -axis, and translations 1 unit to the right and 6 units down are applied to  $y = f(x)$ .

$$y = af[k(x-d)] + c$$

$$\therefore a = -1$$

$$k = 2$$

$$d = +1$$

$$c = -6$$

$$y = -f(2(x-1)) - 6$$

Ch. 1 - 3

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22 - 24] 26, 27, 30 - 32

Unit 2 + 3 next