

3U U2: Intro to Functions - Practice Problems

Multiple Choice

Identify the choice that best completes the statement or answers the question. Circle the letter of your choice **AND** write the letter beside the question number.

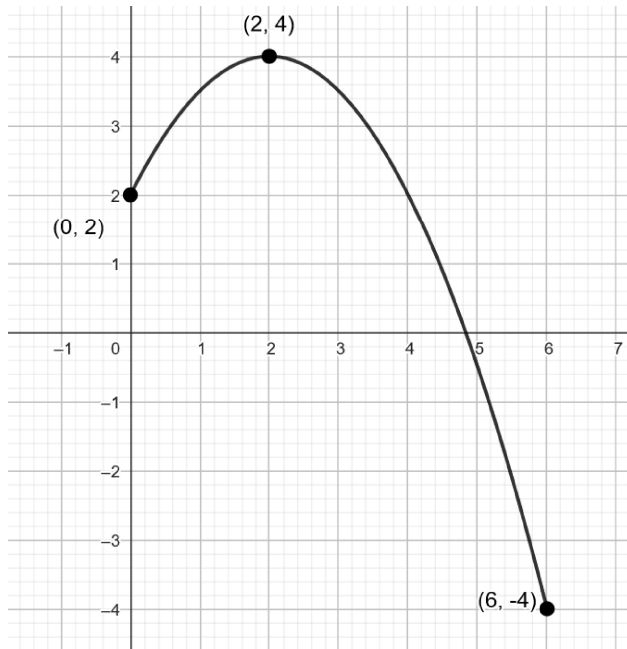
- The temperature fell at a rate of $0.65\text{ }^{\circ}\text{C/h}$. The temperature was recorded at $37\text{ }^{\circ}\text{C}$ at 6 p.m. Which function can be used to represent this situation?
 - $f(x) = 37 - 0.65x$
 - $f(x) = 37x + 0.65$
 - $f(x) = 0.65x + 37$
 - $f(x) = 0.65x - 37$
- Consider the functions $f(x) = -(x^2) + 6x$ and $g(x) = x^2 - 9x + 1$. Which of the following is true?
 - $f(-3) > g(-3)$
 - $f(0) = g(0)$
 - $f(4) < g(4)$
 - $f(-2) < g(-2)$
- Evaluate $f(x) = -4x^2 + 7$ for $f(1) + f(-2)$.
 - 6
 - 3
 - 26
 - 94
- Debra thought of a number. She squared the number and added the original number to the result. She then divided the sum by 4. Which function represents Debra's number?
 - $f(x) = x^2 + \frac{x}{4}$
 - $f(x) = \frac{2x + x}{4}$
 - $f(x) = \frac{x^2 + x}{4}$
 - $f(x) = \frac{2x}{4} + x$
- What are the domain and range of the function $f(x) = \sqrt{x - 5}$?
 - Domain = $\{x \in \mathbf{R}\}$
Range = $\{y \in \mathbf{R}\}$
 - Domain = $\{x \in \mathbf{R} \mid x \geq 0\}$
Range = $\{y \in \mathbf{R} \mid y \geq 0\}$
 - Domain = $\{x \in \mathbf{R} \mid x \geq 25\}$
Range = $\{y \in \mathbf{R} \mid y \geq 1\}$
 - Domain = $\{x \in \mathbf{R} \mid x \geq 5\}$
Range = $\{y \in \mathbf{R} \mid y \geq 0\}$
- Which of the following is the inverse relation to the set of ordered pairs $\{(-10, 5), (-7, 9), (0, 6), (8, -12)\}$?
 - $\{(5, -10), (9, -7), (6, 0), (-12, 8)\}$
 - $\{(-10, -5), (-7, -9), (0, -6), (8, 12)\}$
 - $\{(10, -5), (7, -9), (0, -6), (-8, 12)\}$
 - $\{(-5, 10), (-9, 7), (-6, 0), (12, -8)\}$

Written Solutions

Provide solutions clearly showing your work.

- State the definition of a function. (this is on your test for sure)

8. What are the domain and range of the graph? Is the graph a function? Why or why not?



9. Consider the function $g(x) = -2x - 5$. Determine
a) $g(3)$.
b) x if $g(x) = 5$

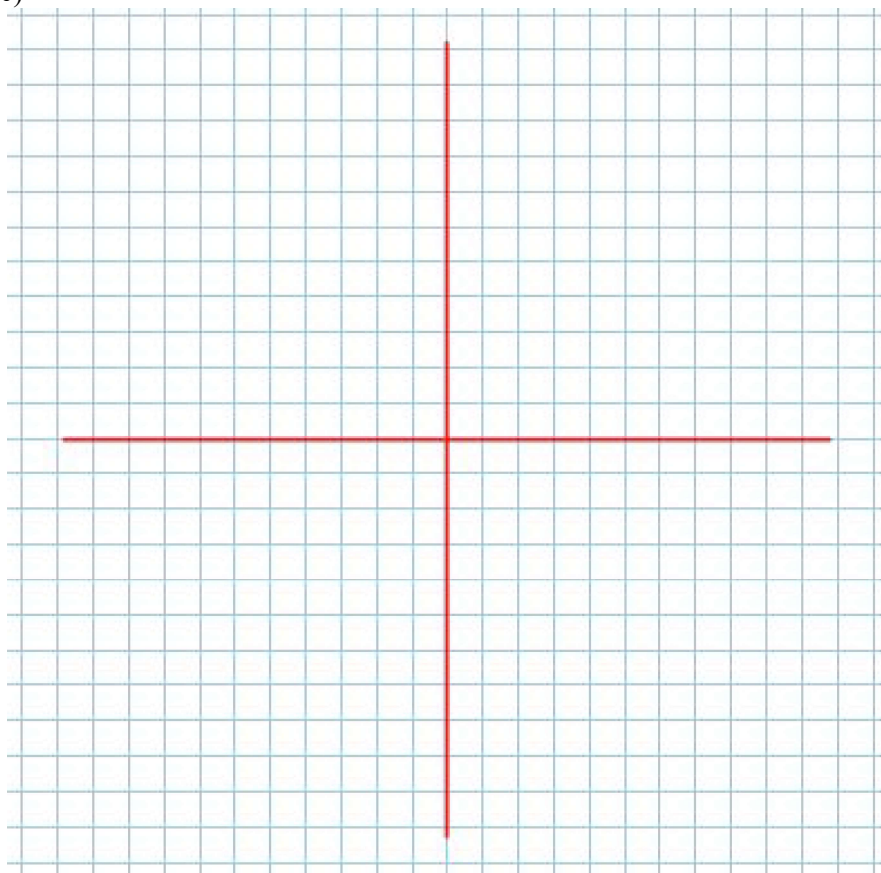
10. Given the function $f(x) = -2(x + 4)^2 + 3$:

- a) State the parent function, and call it $g(x)$
- b) State all transformations applied to the parent function
- c) Sketch the graph of the parent function and $f(x)$ on the same set of axes.

a)

b)

c)



11. Given the function $f(x) = \sqrt{x}$, write the **equation** for a transformed function, $g(x)$, after the following transformations: (No sketch required - just the equation)
- horizontal stretch by the factor 2,
 - vertical stretch by the factor 3
 - Reflection around the x -axis
 - Shift 3 units left and 5 units up
12. Consider the function $f(x) = 6 + 5x - 2x^2$. Determine the range of $f(x)$ if the domain is given by $D_f = \{-2, -1, 0, 3\}$.
13. Determine the inverse function $f^{-1}(x)$ given $f(x) = \frac{1}{2}\sqrt{3x-6} + 5$. Use the method of your choice (brute force or transformations).