Just In Time Quick Check
Standard of Learning (SOL) A.7e

Strand: Functions

Standard of Learning (SOL) A.7c

The student will investigate and analyze linear and quadratic function families and their characteristics both algebraically and graphically, including values of a function for elements in its domain.

Grade Level Skills:
- For any value, *x,* in the domain of *f*, determine *f*(*x*).
- Investigate and analyze characteristics and multiple representations of functions with a graphing utility.

Just in Time Quick Check

Just in Time Quick Check Teacher Notes

Supporting Resources:
- VDOE Mathematics Instructional Plans (MIPS)
  - A.7abef - Functions 1: Investigating Relations and Functions (Word) / PDF Version
  - A.7aef- Square Patios (Word) / PDF Version
- VDOE Algebra Readiness Formative Assessments
  - A.7a,b,e (Word) / PDF
- VDOE Word Wall Cards: Algebra I   (Word) | (PDF)
  - Function (definition)
  - Functions (examples)
  - Domain
  - Range
  - Function Notation
- VDOE Rich Mathematical Tasks: The Soccer Competition
  - A.7 The Soccer Competition Task Template (Word) / PDF Version

Supporting and Prerequisite SOL: A.1b, A.7b, 8.14a, 7.11

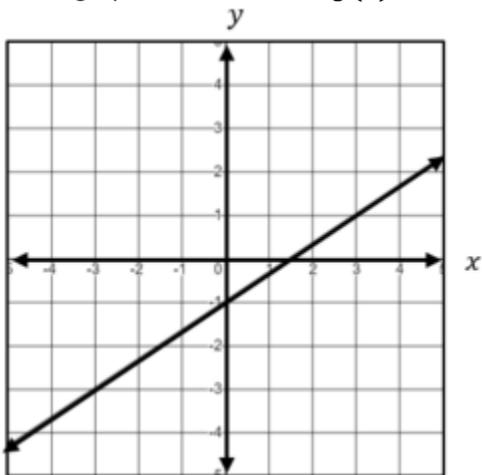# SOL A.7e - Just in Time Quick Check

1. If $f(x) = 3 - 5x$, then find the value of each of the following. Show your work/thinking.

   a) $f(2)$

   b) $f(-4)$

   c) $f(0)$

2. Given the graph of the function $g(x)$ below, what is the approximate value of $g(3)$?

3. Find the values of the range of $f(x) = \frac{1}{2}x^2 - 3x + 1$ when the domain is $\{-2, 3, 8\}$.

4. Let $h(x) = -2x^2 + kx + 5$. If $h(1) = -5$, what is the value of $h(-4)$?

# SOL A.7e - Just in Time Quick Check Teacher Notes
Common Errors/Misconceptions and their Possible Indications

1. If $f(x) = 3 - 5x$, then find the value of each of the following. Show your work/thinking.

   a) $f(2)$ b) $f(-4)$ c) $f(0)$

   A common error a student may make is to set the function equal to the given value, $2 = 3 - 5x$, and then solve for x. This may indicate a misunderstanding of function notation and how it relates to the domain and range. A strategy that might be helpful for students is to make the connection between f(2), f(-4), f(0) and f(x) and that the values 2, -4, and 0 are replacement values for x. In addition, it might benefit a student to rewrite the function as y = 3 – 5x and create a tables of values including 2, -4, and 0 to represent the domain.

2. Given the graph of the function $g(x)$ below, what is the approximate value of $g(3)$?
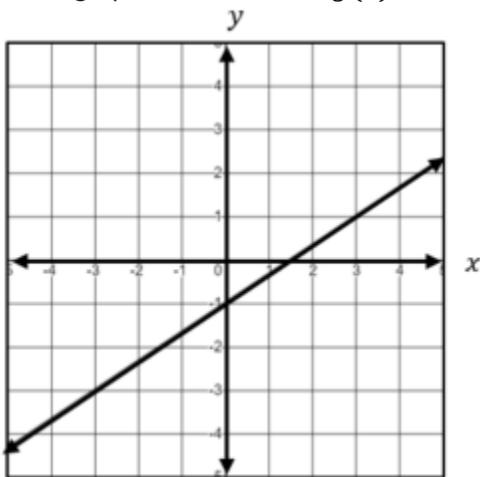
   A common error a student may make is to say $g(3) = 1.5$. This may indicate that a student interprets finding the value of a function as finding the zero of the function when given a graph. Since g(3) means to find the value of the function when x = 3, a strategy that might be helpful for students is to draw a vertical line representing x = 3 and determine the y-coordinate of the point where the vertical line intersects the graph of the function provided.

3. Find the values of the range of $f(x) = \frac{1}{2}x^2 - 3x + 1$ when the domain is $\{-2, 3, 8\}$.

   A common error a student may make is substitute multiple domain values at one time. This may look like $\frac{1}{2}(-2^2) - 3(3) + 1$. This may indicate a student has a misunderstanding that each input value will have one corresponding output value. A strategy that may work is to rewrite the question as $f(-2), f(3), f(8)$ to show that three different domain elements are given and that three corresponding range values need to be calculated. In addition, it might be helpful for students to graph the function provided and determine the values for f(-2), f(3), and f(8) from the graph.

4. Let $h(x) = -2x^2 + kx + 5$. If $h(1) = -5$, what is the value of $h(-4)$?

   A common error a student may make is to only complete the first step of this multi-step problem by substituting 1 for x and -5 for y and stating the value of k as the answer. (k = -8, therefore h(-4) = -8). This may indicate that a student has a misunderstanding of solving equations and finding function values that involve a multi-step process. A strategy that might be very helpful for students is to explain that finding the value of h(-4) requires finding the value of k first and then using that value as the coefficient of x in the quadratic function in order to determine the output value of h(-4).