Standard 2 Practice Quiz C

MA 109

Print Your Name: Solutions ID:_____

Be sure that the ID number above is your correct 8-digit student ID number (without the leading 9). If this number is incorrect or not legible, it will take longer to process your score on this quiz.

This is practice for an in-class assessments on Standard 2. The only technology allowed during this quiz is a 4-function calculator. No notes or books may be used. This is an individual quiz, so any work done here must be entirely your own work.

Show all of your work. Your work will be graded on both accuracy and completeness, and partial credit is possible. You have 20 minutes to take this quiz.

Be sure to complete both the questions on this page and those on the back of this page.

1. Find the equation of the linear functions asked for below.
   a. Write the equation of the linear function $f(x)$ with slope 3 and y-intercept $(0,-9)$.

x y

$f(x) = mx + b$

$f(x) = 3x + b$

$-9 = 3(0) + b$

$-9 = 0 + b$

$-9 = b$

Answer: $f(x) = 3x - 9$

   b. Write the equation of the linear function $g(x)$ with slope -2 and goes through the point $(3,7)$.

x y

$g(x) = mx + b$

$g(x) = -2x + b$

$7 = -2(3) + b$

$7 = -6 + b$

$+6 \quad +6$

$13 = b$

Answer: $g(x) = -2x + 13$

2. Suppose we are working with the following system of equations.

$$\begin{cases} 2x + 3y = 15 \\ 5x - 2y = -29 \end{cases}$$

a. Check whether the point $(3,3)$ is a solution to the system. Show your work. If it is a solution to the system, write "yes" in the answer box. If it is not a solution to the system, write "no" in the answer box.

must work for both to be a solution

$2x+3y \stackrel{?}{=} 15$
$2(3)+3(3) \stackrel{?}{=} 15$
$6+9 \stackrel{?}{=} 15$
$15 = 15$ ✓

$5x-2y \stackrel{?}{=} -29$
$5(3)-2(3) \stackrel{?}{=} -29$
$15-6 \stackrel{?}{=} -29$
$9 \stackrel{?}{=} -29$ ✗

Answer: no

b. Check whether the point $(-3,7)$ is a solution to the system. Show your work. If it is a solution to the system, write "yes" in the answer box. If it is not a solution to the system, write "no" in the answer box.

$2x+3y \stackrel{?}{=} 15$
$2(-3)+3(7) \stackrel{?}{=} 15$
$-6+21 \stackrel{?}{=} 15$
$15 \stackrel{?}{=} 15$ ✓

$5x-2y \stackrel{?}{=} -29$
$5(-3)-2(7) \stackrel{?}{=} -29$
$-15-14 \stackrel{?}{=} -29$
$-29 \stackrel{?}{=} -29$ ✓

Answer: yes

3. Suppose $f(x) = 5x^2 - 2x + 3$. Find the average rate of change of $f(x)$ on $[-1, 1]$. Show all of your work, and simplify your answer as much as possible. Write your final answer in the answer box below.

(x_1 x_2)

$y_1 = f(x_1) = f(-1) = 5(-1)^2 - 2(-1) + 3 = 5 + 2 + 3 = 10$
$(-1, 10)$

$y_2 = f(x_2) = f(1) = 5(1)^2 - 2(1) + 3 = 5 - 2 + 3 = 6$
$(1, 6)$

$\text{AROC} = \text{slope} = \frac{10-6}{-1-1} = \frac{4}{-2} = -2$

Answer: -2