

Standard 2 Practice Quiz B

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 slope of each set of points listed below. Show your work. You do not have to simplify your answer. Write your answer in the answer box below. If the slope is undefined, write "undefined" in the answer box below.

a. $(-2, -1)$ and $(-2, 7)$

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$\frac{7 - (-1)}{-2 - (-2)} = \frac{7+1}{-2+2} = \frac{8}{0}$$

(can NEVER divide by 0)

Answer:

undefined

b. $(-2, -1)$ and $(7, -2)$

$$\frac{-2 - (-1)}{7 - (-2)} = \frac{-2+1}{7+2} = \frac{-1}{9}$$

Answer:

$-\frac{1}{9}$

c. $(-2, -1)$ and $(7, 7)$

$$\frac{7 - (-1)}{7 - (-2)} = \frac{7+1}{7+2} = \frac{8}{9}$$

Answer:

$\frac{8}{9}$

2. Solve the following system of equations using either substitution or elimination. Show all of your work, and write your answer as an ordered pair in the answer box below. If there are infinitely many solutions, write "infinitely many". If there is no solution, write "no solution".

$$2(4x-5) = 8x-10 \quad \leftarrow \begin{cases} 4x = y + 5 \rightarrow 4x - 5 = y \\ 2y = 8x - 10 \end{cases}$$

$$\begin{array}{r} 8x - 10 \\ -8x \end{array} = \begin{array}{r} 8x - 10 \\ -8x \end{array}$$

$$-10 = -10$$

no variables left,
true statement

Answer:

infinitely many solutions

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

$$y_1 = f(x_1) = f(a) = 5a^2 + 3 \quad (a, 5a^2 + 3)$$

$$\begin{aligned} y_2 = f(x_2) = f(a+h) &= 5(a+h)^2 + 3 = 5(a+h)(a+h) + 3 \\ &= 5(a^2 + ah + ah + h^2) + 3 \end{aligned}$$

$$= 5(a^2 + 2ah + h^2) + 3$$

$$= 5a^2 + 10ah + 5h^2 + 3$$

$$(a+h, 5a^2 + 10ah + 5h^2 + 3)$$

ARUC = slope =

$$\frac{(5a^2 + 10ah + 5h^2 + 3) - (5a^2 + 3)}{(a+h) - (a)} = \frac{\underline{5a^2} + 10ah + 5h^2 + \underline{3} - \underline{5a^2} - \underline{3}}{\underline{a+h} - \underline{a}}$$

$$= \frac{10ah + 5h^2}{h} = \frac{h(10a + 5h)}{h}$$

Answer:

$10a + 5h$