

# Standard 1 Practice Quiz E

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 1. 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. Suppose  $f(x) = \begin{cases} 3x + 1 & x > 5 \\ x^2 + 1 & 1 < x \leq 5 \\ 2x - 5 & x \leq 1 \end{cases}$

- a. What is  $f(7)$ ? Simplify your answer and write it in the answer box below.

7 > 5 so use the first equation:  
 $3(7) + 1 = 21 + 1 = 22$

Answer:

22

- b. What is  $f(1)$ ? Simplify your answer and write it in the answer box below.

$1 \leq 1$  so use the last equation

$2(1) - 5 = 2 - 5 = -3$

Answer:

-3

- c. What is the y-intercept of  $f(x)$ ? Write your answer as an **ordered pair** in the answer box below.

↑  
where  $x=0$

$0 \leq 1$  so use the last equation

$y = 2(0) - 5 = 0 - 5 = -5$

Answer:

(0, -5)

2. Suppose  $f(x) = 3x^2 + 4x - 2$ .

a. What is  $f(f(-1))$ ? Show your work, simplify your answer, and write your answer in the answer box below.

$$f(-1) = 3(-1)^2 + 4(-1) - 2 = 3 - 4 - 2 = -3$$

$$\begin{aligned} f(f(-1)) &= f(-3) = 3(-3)^2 + 4(-3) - 2 = 3(9) + 4(-3) - 2 \\ &= 27 - 12 - 2 \\ &= 13 \end{aligned}$$

Answer:

13

b. What is  $f(f(x))$ ? Do not simplify your answer, and write your answer in the answer box below.

$$\begin{aligned} f(f(x)) &= f(3x^2 + 4x - 2) \\ &= 3(3x^2 + 4x - 2)^2 + 4(3x^2 + 4x - 2) - 2 \end{aligned}$$

Answer:

$$3(3x^2 + 4x - 2)^2 + 4(3x^2 + 4x - 2) - 2$$

3. Suppose  $h(x) = 2x^7 + 9$ . Write a formula for  $h^{-1}(x)$ . Show your work and write your answer in the answer box below.

$$x = 2y^7 + 9$$

$$\frac{x-9}{2} = \frac{2y^7}{2}$$

$$\sqrt[7]{\frac{x-9}{2}} = \sqrt[7]{y^7}$$

Answer:

$$\sqrt[7]{\frac{x-9}{2}}$$