

WS#2 Solutions

Math 109 College Algebra
Lecturer: Calvin Hotchkiss
Group Worksheet 2

Fall 2024
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Indicate which group member is taking on which of the following four roles. You will switch roles on the next recitation day.

- Reader: Reads the problem to the group and makes sure everyone understands.
- Spokesperson: presents the work and asks questions to the TA.
- Recorder: writes everyone's names and the group's work on the worksheet.
- Timekeeper: keeps track of time.

Reader's name: _____

Spokesperson's name: _____

Recorder's name: _____

Timekeeper's name: _____

Part 1

(1) What traits/actions do you appreciate in classmates or groupmates?

(2) What traits/actions do you **not** appreciate in a groupmate?

(3) What's one thing you can do to be a good group member this semester? (Different answers for different groupmates encouraged.)

Part 2

(1) Let $f(x) = 2x + 4$. Find $f(-2)$. *Replace "x" by "-2" in the formula*

$$f(-2) = 2 \cdot (-2) + 4 = -4 + 4 = 0$$

- (2) (a) Explain in your own words the definition of a function.

A function "f" is a formula that relates "f(x)" to "x".
↑ ↑
output input

- (b) Consider the function $f(x) = 2x + 4$. Identify the **input** and the **output**.

input : x

output : $f(x)$

- (3) Consider the piecewise function

$$g(x) = \begin{cases} 2 & x \leq -3 \\ 2x + 7 & -3 < x < 2 \\ x^2 - 4 & x \geq 2 \end{cases}$$

(b) since $-3 < -2 < 2$
 (a) since $x = 3 \geq 2$

Compute:

(a) $f(3) = 3^2 - 4 = 9 - 4 = 5$

and

(c) since $x = 2 \geq 2$

(b) $f(-2) = 2 \cdot (-2) + 7 = -4 + 7 = 3$

(c) $f(2) = 2^2 - 4 = 4 - 4 = 0$

- (4) Let $f(x) = 2x^2 + 8$.
 ↙ replace "x" with "a+1"

- (a) Find $f(a+1)$. Simplify your answer.

$$f(a+1) = 2(a+1)^2 + 8 = 2(a^2 + 2a + 1) + 8 = 2a^2 + 4a + 2 + 8 = 2a^2 + 4a + 10$$

- (b) Find $f(a) + 1$. Simplify your answer. Why is this not the same as the answer to (a)?
 ↘ replace "x" with "a", then add "1"

$$f(a) = 2a^2 + 8. \text{ Then, } f(a) + 1 = (2a^2 + 8) + 1 = 2a^2 + 9.$$