

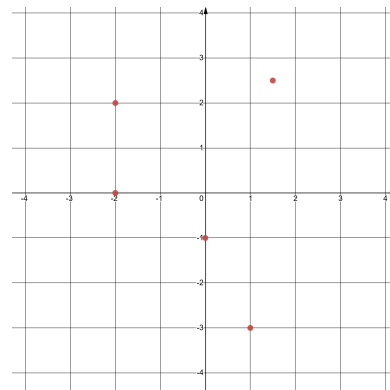
Math 128

Assessment 1

Instructions: On a separate piece of paper write out solutions using complete sentences to explain your work. You may use your book and the internet as long as it does not solve the problem for you. You may not consult with other people. When you are done, upload your work to Gradescope.

Standard 1.

- 1-1.** To the right are five points plotted on the Cartesian coordinate plane. Write down the coordinates of all the points. No explanation is necessary.
- 1-2.** Draw a Cartesian coordinate plane and label the five points $(-1/2, -1/2)$, $(-5, 5)$, $(2, 4)$, $(4, 2)$, and $(0, 1/3)$. No explanation is necessary.
- 1-3.** Write a sentence that explains how you determined the coordinates of the upper-most point in Question 1-1. And write a sentence that explains how you placed the point with coordinates $(-5, 5)$ on the axes in Question 1-2.



Standard 2.

- 2-1.** Give the precise mathematical definition of a function.
- 2-2.** Here is a rule. You give me a number and I flip a coin. If the coin lands showing Heads, the rule says the answer is 1. If the coins lands showing Tails, the rule says the answer is 0. Is this rule a function? Explain why or why not.
- 2-3.** Give an example of a function f that allows for any numerical input (in other words, the domain is all real numbers). Explain why your function does indeed satisfy the definition of a function.

Standard 3.

- 3-1.** Consider the sequence

$$S = \{5, 14, 23, 32, 41, 50, 59, \dots\}.$$

What is the formula for s_n , the n -th entry of S ? Write a paragraph about how you found the formula and why you think you are correct.

- 3-2.** Consider the sequence S that starts out $s_1 = 1$, $s_2 = 2$, $s_3 = 4$, $s_4 = 8$, $s_5 = 16$, $s_6 = 32$, $s_7 = 64$, $s_8 = 128$, and continues from there. What is the formula for s_n , the n -th entry of S ? Write a paragraph about how you found the formula and why you think you are correct.
- 3-3.** Suppose a sequence $S = \{s_1, s_2, s_3, s_4, \dots\}$ is defined by a formula $s_n = f(n)$ for some function f . Write a paragraph explaining how the coordinate pairs $(1, s_1)$, $(2, s_2)$, $(3, s_3)$, $(4, s_4)$... are related to the graph $y = f(x)$.