

Name: \_\_\_\_\_

Date: Oct 15

Math 1

Quiz 3

**Instructions:** This quiz is closed book. You may not use notes, computing devices (calculators, computers, cell phones, etc.) or any other external resource. However, you may ask the instructor for clarification on problems. Please present your work neatly and clearly, **justify** your answers completely, and **box your answers**, when appropriate.

**Problem 1.** For each sequence below, classify it as arithmetic, geometric, both, or neither, and write an explicit formula for it.

a.  $a_n = -3, -6, -12, -24, -48, \dots$

b.  $b_n = 9, 8, 7, 6, 5, \dots$

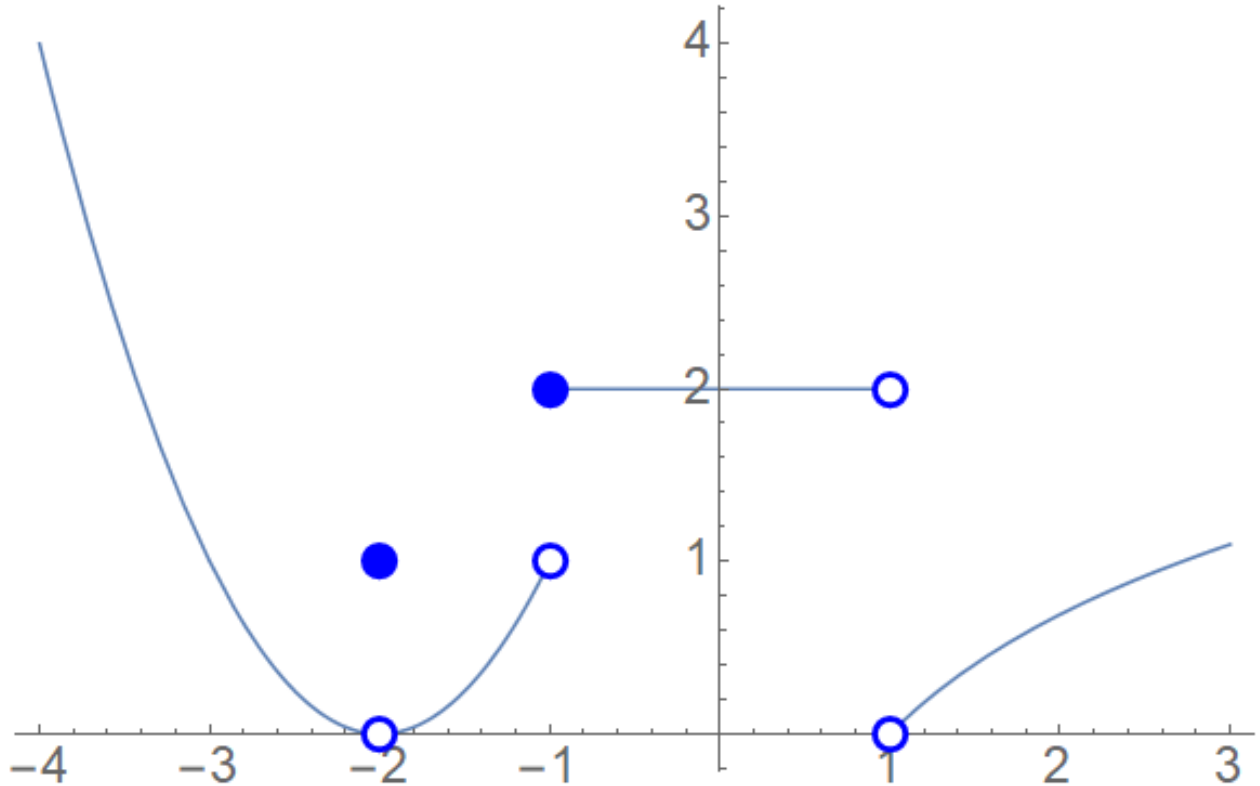
**Problem 2.** Find the limit of each sequence as  $n$  goes to infinity. Show your work.

a.  $a_n = 1 - \frac{2}{n}$

b.  $b_n = \frac{2n^2 - n + 1}{4 + n^2}$

c.  $c_n = \frac{1}{n \csc(n)}$

**Problem 3.** Use the graph of  $y = f(x)$  below to evaluate the limits. Write DNE if the limit does not exist.



- $\lim_{x \rightarrow 1^+} f(x) = \underline{\hspace{2cm}}$
- $\lim_{x \rightarrow -1^-} f(x) = \underline{\hspace{2cm}}$
- $\lim_{x \rightarrow -2} f(x) = \underline{\hspace{2cm}}$
- $\lim_{x \rightarrow 0} f(x) = \underline{\hspace{2cm}}$
- $\lim_{x \rightarrow -1} f(x) = \underline{\hspace{2cm}}$