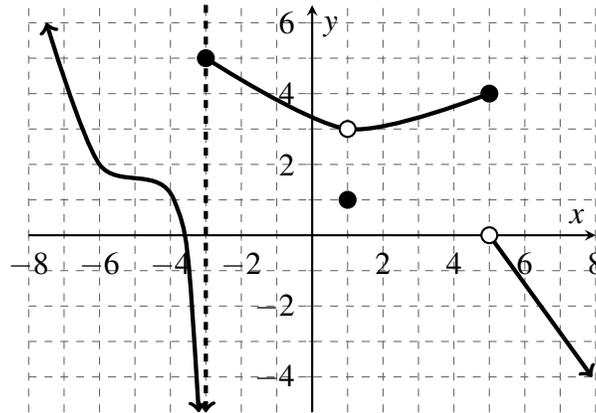


Name: _____

_____ / 20

There are 20 points possible on this quiz. No aids (book, calculator, etc.) are permitted. **Show all work for full credit.**

1. **[8 points]** Use the graph of the function of $f(x)$ to answer the following questions. If a value does not exist, write DNE.



- a. $f(-3) =$ _____ b. $f(1) =$ _____
- c. $\lim_{x \rightarrow -3^-} f(x) =$ _____ d. $\lim_{x \rightarrow -3^+} f(x) =$ _____ e. $\lim_{x \rightarrow -3} f(x) =$ _____
- f. $\lim_{x \rightarrow 1} f(x) =$ _____ g. $\lim_{x \rightarrow -6} f(x) =$ _____ h. $\lim_{x \rightarrow 5^+} f(x) =$ _____

2. **[2 points]** The table below shows total active COVID cases in the Fairbanks North Star Borough over the time period between 7/13/2020 and 8/31/2020 (number of active cases measured on Mondays).

date	7/13	7/20	7/27	8/3	8/10	8/17	8/24	8/31
t (week)	0	1	2	3	4	5	6	7
C (# of cases)	146	167	192	215	238	275	332	409

- a. What was the average rate of change in the number of cases over the 7 weeks? Show your work and include correct units in your answer.
- b. What was the average rate of change in the number of cases from week 2 to week 5? Show your work and include correct units in your answer.

3. [6 points] Compute the following infinite limits. For each limit, justify your answer with a sentence or two, perhaps with a rough sketch. An answer with no justification will not receive full credit.

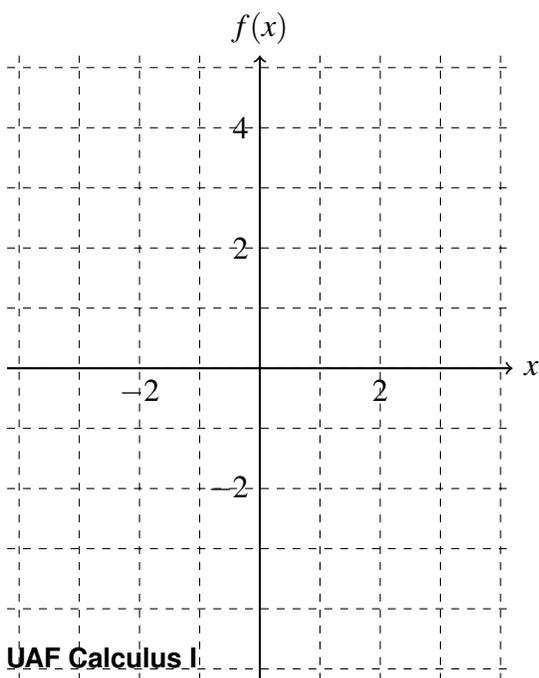
a. $\lim_{x \rightarrow 7^-} \frac{x^2 - 6}{x - 7} =$

b. $\lim_{x \rightarrow 3^+} 18 \ln(x - 3) =$

4. [4 points] On the axes below, sketch the graph of the function

$$f(x) = \begin{cases} 1 - x^2 & x < 0 \\ 4 & x = 0 \\ 3 - x & x > 0. \end{cases}$$

Then compute, with brief justification, the requested values in the table. An answer with no justification will not receive full credit.



Value	Justification
$f(0) =$	
$\lim_{x \rightarrow 0^-} f(x) =$	
$\lim_{x \rightarrow 0} f(x) =$	