

Name: _____

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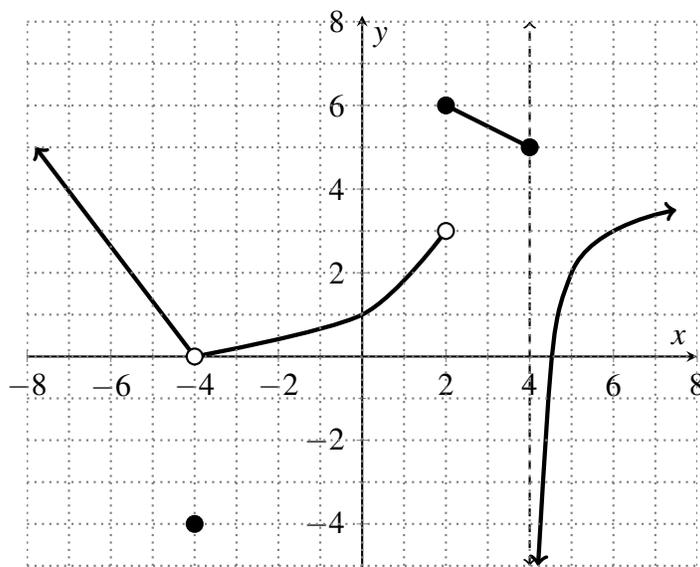
Please circle your instructor's name:

Leah Berman

Jill Faudree

There are 25 points possible on this quiz. No aids (book, calculator, etc.) are permitted. Show all work for full credit.

1. [9 points] Use the graph of the function of $f(x)$ to answer the following questions.



- a. $f(-4) =$ _____ b. $f(2) =$ _____ c. $f(4) =$ _____
- d. $\lim_{x \rightarrow 2^-} f(x) =$ _____ e. $\lim_{x \rightarrow 2^+} f(x) =$ _____ f. $\lim_{x \rightarrow 2} f(x) =$ _____
- g. $\lim_{x \rightarrow -4} f(x) =$ _____ h. $\lim_{x \rightarrow 0} f(x) =$ _____ i. $\lim_{x \rightarrow 4^+} f(x) =$ _____

2. [4 points] A full tank holds 2000 liters of water and is filled in one hour. The values in the table show the volume V of water in the tank (in liters) after t minutes.

t (minutes)	0	10	20	30	40	50	60
V (liters)	0	200	500	900	1500	1800	2000

- a. Find the average rate of change of the water in the tank in the first half of an hour. Include units in your answer.
- b. During what 10 minute interval was the average rate of change of the water the greatest (in magnitude)?

3. [6 points] Compute the following infinite limits. For each limit, justify your answer with a sentence or two, perhaps with a rough sketch.

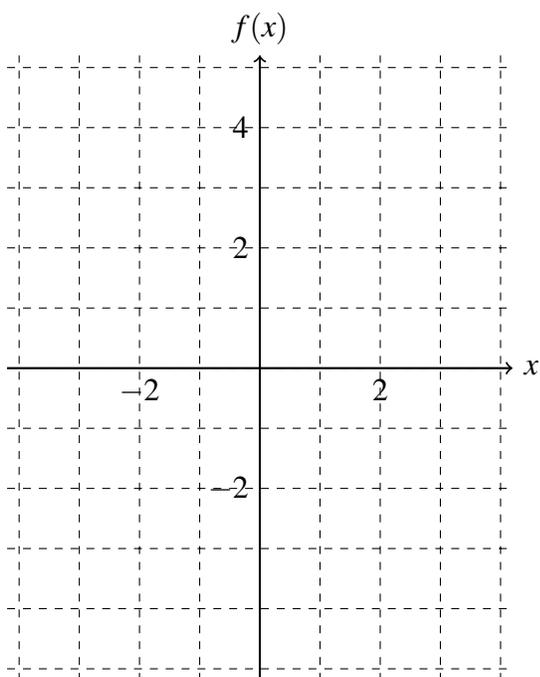
a. $\lim_{x \rightarrow 5^+} -3 \ln(x - 5) =$

b. $\lim_{x \rightarrow \pi^-} \frac{x + 2}{x - \pi} =$

4. [6 points] On the axes below, sketch the graph of the function

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

Then compute, with brief justification, the requested values in the table.



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