

Name: _____

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

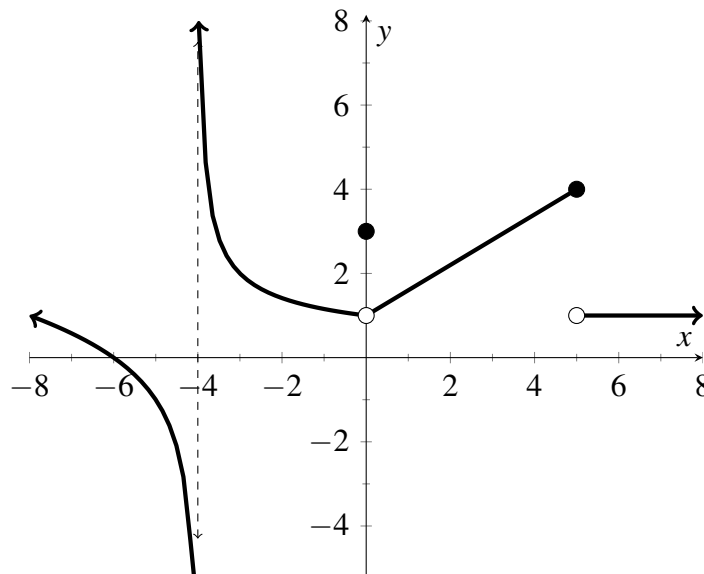
1. [4 points] The temperature on a Fairbanks January morning is rapidly rising. The table below indicates the temperature in degrees Fahrenheit measured once an hour starting at some initial time $t = 0$ hours.

t (hours)	0	1	2	3	4	5
T ($^{\circ}\text{F}$)	2	5	12	18	23	27

- a. Find the average rate of change of the temperature over the entire measurement period.

- b. Find the average rate of change of the temperature from hour 2 to hour 4.

2. [9 points] Use the graph of the function of $f(x)$ to answer the following questions.



- a. $\lim_{x \rightarrow 5^+} f(x) =$ _____
- b. $\lim_{x \rightarrow 5^-} f(x) =$ _____
- c. $\lim_{x \rightarrow 5} f(x) =$ _____
- d. $f(5) =$ _____
- e. $f(0) =$ _____
- f. $f(-6) =$ _____
- g. $\lim_{x \rightarrow -4^+} f(x) =$ _____
- h. $\lim_{x \rightarrow 0} f(x) =$ _____
- i. $\lim_{x \rightarrow -6} f(x) =$ _____

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

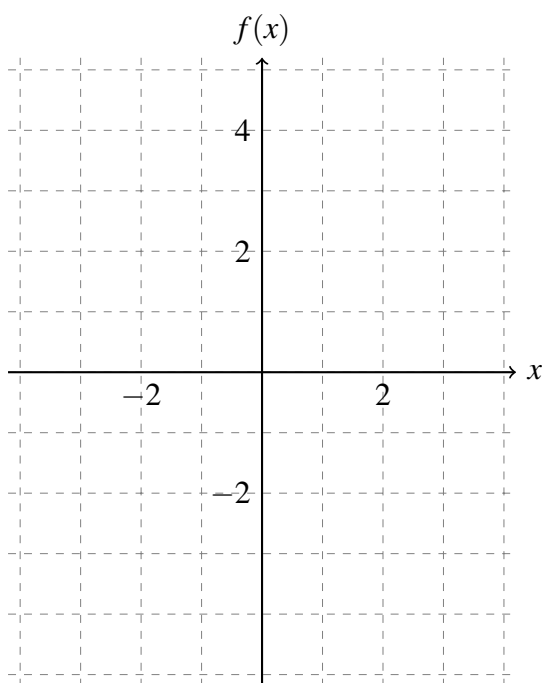
a. $\lim_{x \rightarrow 2\pi^-} \frac{x+3}{\sin(x)} = \boxed{}$

b. $\lim_{x \rightarrow 2^+} \frac{\sqrt{5}}{(x-2)^4} = \boxed{}$

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

$$f(x) = \begin{cases} x+2 & x < -1 \\ -2 & x = -1 \\ \frac{1}{x+1} & x > -1. \end{cases}$$

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



Value	Justification
$f(-1) =$	
$\lim_{x \rightarrow -1} f(x) =$	
$\lim_{x \rightarrow -1^-} f(x) =$	