

Name: _____

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Circle one: Rhodes (F01) | Bueler (F02) | Jurkowski (F03)

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

1. [4 points] In successive weeks, the amount of heating oil in a tank is recorded, as shown in the table.

t (weeks)	1	2	3	4	5	6
A (gallons)	321	284	258	197	154	87

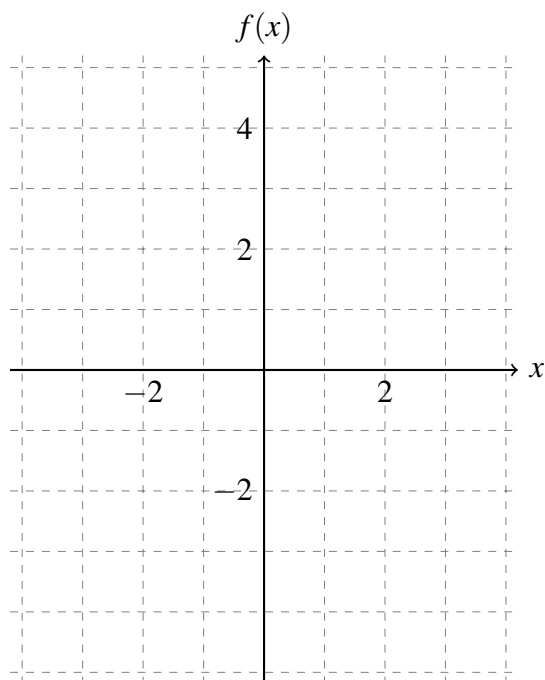
- a. Find the average rate at which the amount changed over the entire period. Specify units.

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

2. [6 points] On the axes below, sketch the graph of the function

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

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



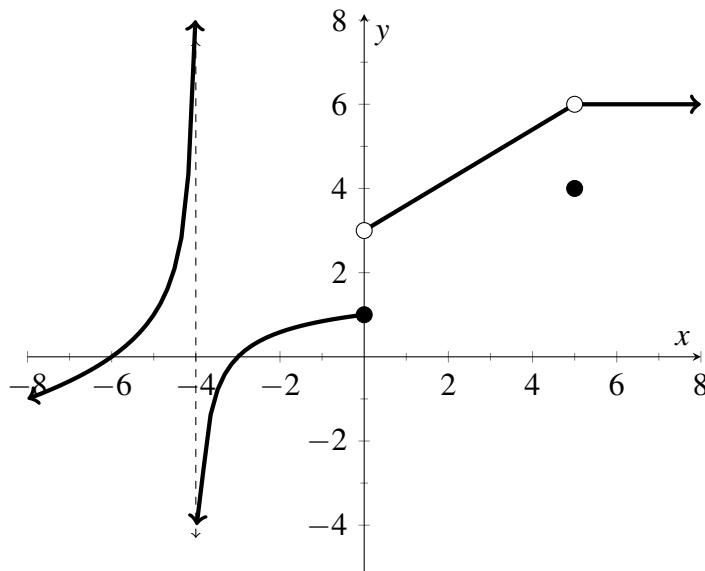
Value	Justification
$f(1) =$	
$\lim_{x \rightarrow 1^-} f(x) =$	
$\lim_{x \rightarrow 1} f(x) =$	

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

a. $\lim_{x \rightarrow \pi^+} \frac{\sqrt{7}}{\sin(x)} = \boxed{}$

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

4. [9 points] Use the graph of the function of $f(x)$ to answer the following questions.



a. $f(-6) = \underline{\hspace{2cm}}$

b. $f(0) = \underline{\hspace{2cm}}$

c. $f(5) = \underline{\hspace{2cm}}$

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

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

f. $\lim_{x \rightarrow 0} f(x) = \underline{\hspace{2cm}}$

g. $\lim_{x \rightarrow -4^+} f(x) = \underline{\hspace{2cm}}$

h. $\lim_{x \rightarrow 5} f(x) = \underline{\hspace{2cm}}$

i. $\lim_{x \rightarrow -6} f(x) = \underline{\hspace{2cm}}$