

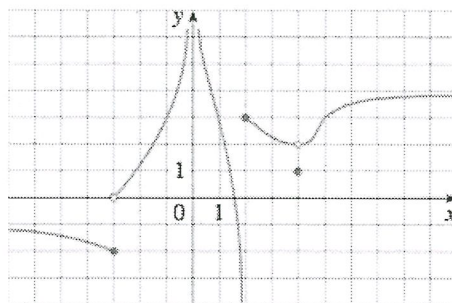
Name: \_\_\_\_\_

Math 151-01 Calculus I – Crawford

Quiz 1-C

12 September 2017

Books, notes (in any form), and calculators are not allowed. *Show all your work.* Good Luck!



1. (5 pts) Given the graph of  $f(x)$  above, state the value of each quantity below, if it exists. Clearly indicate  $+\infty$  or  $-\infty$  in the case of an infinite limit. If the quantity does not exist, state DNE.

(a).  $f(2) = \boxed{3}$

(b).  $\lim_{x \rightarrow 0^+} f(x) = \boxed{+\infty}$

(c).  $\lim_{x \rightarrow -3^+} f(x) = \boxed{0}$

(d).  $\lim_{x \rightarrow 4} f(x) = \boxed{2}$

2. (5 pts) Evaluate the following limit, if it exists. Clearly indicate  $+\infty$  or  $-\infty$  in the case of an infinite limit. If the limit does not exist, clearly explain the reason why.

$$\lim_{x \rightarrow 4} \frac{\frac{1}{x} - \frac{1}{4}}{x - 4} \xrightarrow{\text{LCD}} \lim_{x \rightarrow 4} \frac{\left(\frac{4-x}{4x}\right)}{x-4} = \lim_{x \rightarrow 4} \frac{4-x}{4x} \cdot \frac{1}{x-4}$$

$$\frac{\frac{1}{4} - \frac{1}{4}}{4-4} = \lim_{x \rightarrow 4} \frac{-\cancel{(x-4)}}{4x} \cdot \frac{1}{\cancel{(x-4)}}$$

$$\frac{0}{0} = \lim_{x \rightarrow 4} \frac{-1}{4x} = \frac{-1}{4 \cdot 4} = \boxed{-\frac{1}{16}}$$

Ind. Form

$\Rightarrow$  More Work.

3. (5 pts) Evaluate the following limit, if it exists. Clearly indicate  $+\infty$  or  $-\infty$  in the case of an infinite limit. If the limit does not exist, clearly explain the reason why.

$$\lim_{x \rightarrow -2} \frac{x^2 - 4}{x^2 - 2x - 8} = \lim_{x \rightarrow -2} \frac{\cancel{(x+2)}(x-2)}{\cancel{(x+2)}(x-4)} = \lim_{x \rightarrow -2} \frac{x-2}{x-4}$$

$$\frac{(-2)^2 - 4}{(-2)^2 - 2(-2) - 8} = \frac{-2-2}{-2-4}$$

$$\frac{4-4}{4+4-8} = \frac{-4}{-6}$$

$$\frac{0}{0} = \boxed{\frac{2}{3}}$$

Ind. Form

$\Rightarrow$  More Work.