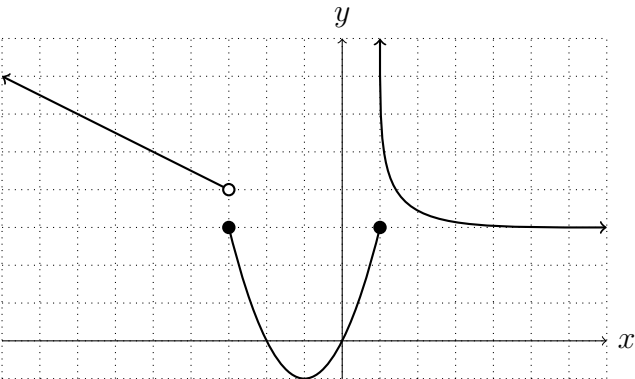


Quiz Three
Show all your work

Name: _____
Number: _____
Signature: _____
Score: ____/10

Problem 1: Answer the following questions according to the graph of $y = f(x)$ as shown. Note one hollow dot at $(-3, 4)$ and one solid dot at $(-3, 3)$.



a. $f(-3) =$ 3

b. $\lim_{x \rightarrow -3^-} f(x) =$ 4

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

d. $\lim_{x \rightarrow -3} f(x) =$ DNE

e. $\lim_{x \rightarrow -4} \frac{f(x) - f(-4)}{x - (-4)} =$ $-1/2$

f. $\lim_{x \rightarrow -1} \frac{f(x) + 1}{x - (-1)} =$ 0

g. $\lim_{x \rightarrow 1^+} f(x) =$ ∞

h. $\lim_{x \rightarrow \infty} f(x) =$ 3

Score: /8

Problem 2: Evaluate the following limit. Show all steps.

$$\lim_{x \rightarrow 1} \frac{x^2 - 5x + 4}{|1 - x|}$$

$$\lim_{x \rightarrow 1^-} \frac{x^2 - 5x + 4}{|1 - x|} = \lim_{x \rightarrow 1^-} \frac{(x - 1)(x - 4)}{1 - x} = \lim_{x \rightarrow 1^-} \frac{(x - 1)(x - 4)}{-(x - 1)} = \lim_{x \rightarrow 1^-} -(x - 4) = 3,$$
$$\lim_{x \rightarrow 1^+} \frac{x^2 - 5x + 4}{|1 - x|} = \lim_{x \rightarrow 1^+} \frac{(x - 1)(x - 4)}{-(1 - x)} = \lim_{x \rightarrow 1^+} \frac{(x - 1)(x - 4)}{x - 1} = \lim_{x \rightarrow 1^+} x - 4 = -3,$$

so $\lim_{x \rightarrow 1} \frac{x^2 - 5x + 4}{|1 - x|}$ does not exist.

Score: /2