

Math 171 - Quiz 3

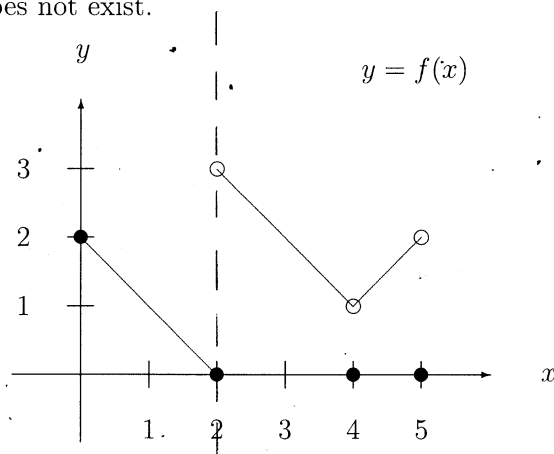
September 5, 2018

Name key

Score _____

Show all work to receive full credit. Supply explanations when necessary.

1. (2 points) Referring to the graph shown below, determine each of the following or explain why it does not exist.



(a) $f(2) = \boxed{0}$

$x = 2$

(b) $\lim_{x \rightarrow 2} f(x) = \boxed{\text{DNE}}$ BECAUSE $\lim_{x \rightarrow 2^-} f(x) = 0$ & $\lim_{x \rightarrow 2^+} f(x) = 3$

2. (8 points) Evaluate each limit analytically. (Use the back if you need more space.)

(a) $\lim_{x \rightarrow -8} \frac{x^2 + 5x - 24}{2x + 16} = \frac{0}{0} \text{ More work!} = \lim_{x \rightarrow -8} \frac{(x+8)(x-3)}{2(x+8)} = \boxed{-\frac{11}{2}}$

(b) $\lim_{x \rightarrow 0} \frac{7 \sin 3x}{5x} = \frac{0}{0} = \frac{7 \cdot 3}{5} \lim_{x \rightarrow 0} \frac{\sin 3x}{3x} = \boxed{\frac{21}{5}}$

(c) $\lim_{r \rightarrow 1} \frac{(r+2)(r+1) - 6r}{r-1} = \frac{0}{0} = \lim_{r \rightarrow 1} \frac{r^2 + 3r + 2 - 6r}{r-1} = \lim_{r \rightarrow 1} \frac{r^2 - 3r + 2}{r-1} = \lim_{r \rightarrow 1} \frac{(r-2)(r-1)}{(r-1)} = \boxed{-1}$

(d) $\lim_{t \rightarrow 6} \frac{\frac{1}{t} - \frac{1}{6}}{t - 6} = \frac{0}{0} = \lim_{t \rightarrow 6} \frac{\frac{6-t}{6t}}{t-6} = \lim_{t \rightarrow 6} \frac{-1(t-6)}{6t(t-6)} = \boxed{\frac{-1}{36}}$