

King Fahd University of Petroleum and Minerals

Department of Math & Stat

Math 101.04 Quiz I Term 081

Name: _____ ID#: _____

Show all your work in every problem.

1. Find $\lim_{x \rightarrow 0} \frac{\sqrt{x+1} - 1}{2 - \sqrt{x+4}}$.

2. If $\lim_{x \rightarrow 2} \frac{f(x) - 5}{x - 2} = 4$, find $\lim_{x \rightarrow 2} f(x)$.

3. Find $\lim_{\theta \rightarrow (-\pi/2)^-} \frac{\pi}{\cos \theta}$.

4. Find all vertical asymptotes of $f(x) = \frac{x^3 - x^2 - x + 2}{(x - 1)^2(x + 3)}$.

5. Find $\lim_{x \rightarrow 3} \frac{x - 3}{\sqrt{x^2 - 9}}$.

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Show all your work in every problem.

1. Find $\lim_{x \rightarrow 0} x^2 \sin^2 \frac{1}{x}$.

2. Find

(a) $\lim_{x \rightarrow 0^+} \frac{[x]}{x}$.

(b) $\lim_{x \rightarrow 0^-} \frac{[x]}{x}$.

(c) $\lim_{x \rightarrow 0} \frac{[x]}{x}$.

3. Find

(a) $\lim_{x \rightarrow 1^+} \left(\frac{1}{x-1} - \frac{1}{|x-1|} \right)$.

(b) $\lim_{x \rightarrow 1^-} \left(\frac{1}{x-1} - \frac{1}{|x-1|} \right)$.

(c) $\lim_{x \rightarrow 1} \left(\frac{1}{x-1} - \frac{1}{|x-1|} \right)$.

4. Given $f(x) = 2x - 2$, find an open interval around -2 on which the inequality $|f(x) + \sigma| < 0.2$ holds.

5. Find $\lim_{x \rightarrow 3} \frac{x-3}{\sqrt{x^2-9}}$.