

King Fahd University of Petroleum and Minerals
Department of Mathematics and Statistics
Math 101 Quiz III (Term 171)
(Show your work)

Name : ID #.....

1. **(6 points)** Differentiate $f(x) = \sqrt[3]{x} \left(\frac{1}{x} - x^2 \right)$.

2. **(8 points)** Differentiate $f(x) = \frac{e^x + x^e}{\cos x + \sin x}$.

3. **(6 points)** Evaluate $\lim_{x \rightarrow \infty} x \sin \frac{1}{2x}$.