

King Fahd University of Petroleum and Minerals
Department of Math & Stat
Math 101.4 Quiz VII Term 081

Name: _____ ID#: _____

Show all your work in every problem.

1. Find the absolute maximum and minimum values of

$$f(x) = \begin{cases} 4x - 2, & x < 1 \\ (x - 2)(x - 3), & x \geq 1 \end{cases}$$

on $\left[\frac{1}{2}, \frac{7}{3}\right]$.

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1. (a) Find the linear approximation of $f(x) = \frac{1}{\sqrt{1-x}}$ at $x_0 = 0$.

(b) Use (a) to approximate $\frac{1}{\sqrt{.96}}$.

2. The volume of a sphere is to be computed from a measured value of its radius. Estimate the maximum permissible percentage error in the measurement if the percentage error of the volume must be kept within $\pm 3\%$

($V = \frac{4}{3}\pi r^3$ is the volume of a sphere of radius r).