

King Fahd University of Petroleum and Minerals

MATH-101

Dr. M. Jarrar

Quiz 4

Name:-

ID:-

Sec.:-

S.N.:-

Q1) Suppose that $3 \leq f'(x) \leq 5$ for all values of x . Show that $18 \leq f(8) - f(2) \leq 30$.

Q2) Find the limit, if it is exist.

a) $\lim_{x \rightarrow 1} \left(\frac{x}{x-1} - \frac{1}{\ln x} \right)$

b) $\lim_{x \rightarrow 0^+} (e^x - 1)^{\frac{1}{\ln x}}$

Q3) $f(x) = \frac{x^3}{x^2 + 1}$ find the following

- The asymptotes if any
- On what interval is f increasing or decreasing
- At what values of x does f have a local maximum or minimum
- On what interval is f concave upward or downward
- The inflection point(s)
- Sketch a graph of f