

Department of Mathematics and Statistics  
King Fahd University of Petroleum and Minerals  
Kingdom of Saudi Arabia

Math 101-102

Quiz # : 3

Name : = ----- ID# -----

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Q 1 Let  $f(x) = \frac{5x^2 + 1}{9 - x^2}$

- Evaluate  $f^{(1)}(x)$
- $f^{(2)}(x)$
- Find the intervals where  $f(x)$  is increasing or decreasing
- Find the relative extrema of the function
- Discuss the convexity of the function
- Plot the graph of the function

Q. 2 Find the maximum volume of the right circular cylinder that can be inscribed in a cone of altitude 32 cm and base radius 5 cm , if the axes of the cone and cylinder coincide.

Q.3 Find the point on C:  $2x^2 - 5x + 1$  that is closest to  $A(0,5)$  .