

King Fahd University of Petroleum & Minerals
Faculty of Science
Mathematical Sciences
Math 101- Quiz # 5

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Name:

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1) Find the limit if it exists:

a) $\lim_{(x,y) \rightarrow (0,0)} \frac{x - y}{\sqrt{x} - \sqrt{y}}$

b) $\lim_{(x,y) \rightarrow (1,1)} \frac{x^3 - x + y - x^2 y}{x - y}$

c) $\lim_{(x,y) \rightarrow (0,0)} \frac{xy^2}{x^2 + y^4}$

2) Given that the function $f(x) = \begin{cases} \frac{\cot(x^3 + y^3)}{-2(x^3 + y^3)}, & (x, y) \neq (0,0) \\ B, & (x, y) = (0,0) \end{cases}$ is continuous at the origin, find the value of B?

3) Given $f(x, y, z) = x^3 y^5 z^7 + xy^2 + y^3 z$, find f_{yzx}

4) Find the slope of the function $2x^2 \sin(3x + y^2) - 2z = 0$ in the x-direction at the point $(\frac{\pi}{3}, 0)$.

5) Given $f(x, y) = \frac{2x+1}{y+1}$, find the linear approximation formula at the origin

6) Use differentials to approximate $\sqrt{(5.01)^2 - (2.98)^2}$

7) The height & base of triangle are 30 cm & 40 cm, if the error in height & base respectively are 0.2 & 0.3 in height & base, find the percentage error in the area