

King Fahd University of Petroleum and Minerals
Department of Mathematical Sciences
MATH 201, Sections 8 and 11(041)
Quiz -3

Time: 15 Minutes

Marks: 9

Instructor : Dr. Abdul Rahim Khan

Version (a)

(i) Let $h(x, y) = \sqrt{4 - x^2 - y^2}$. Find domain and range of h .

(ii) For $f(x, y) = (x^3 + y^3)^{\frac{1}{3}}$, calculate $f_y(0, 0)$.

Version (b)

Let $w = (x^2 + y^2 + z^2)^{-\frac{1}{2}}$.

Check whether or not w satisfies the Laplace equation.

Version (c)

Find slope of surface $f(x, y, z) = \tan^{-1}\left(\frac{1}{xy^2x^3}\right)$ at the point $(1,1,1)$ in the x and z -directions.

Version (d)

Let $f(x, y) = \frac{1 - x^2 - y^2}{x^2 + y^2}$.

Is it possible to define $f(0, 0)$ so that f will be continuous at $(0,0)$?

Is it true that $f_{xy}(1, 2) = f_{yx}(1, 2)$?