

Name _____ I.D.# _____ Serial

Q1 Let $f(x,y,z) = x^{\frac{2}{3}} \sin y \ln z$, find f_x, f_y, f_z .

Q2 Use total differential to estimate the change as the function $f(x,y,z) = 2x^2y - 3xz^2 + 4y^2z$ varies from the point $P(1, 2, 3)$ to the point $Q(1.02, 2.03, 2.95)$..

Q3 Let $z = \sin(x^2 + y^2)$, $f(x^2 + y^2) = \frac{z}{x^2 + y^2}$, show that $y \frac{z}{x} = x \frac{z}{y}$ $4xy \cos(x^2 + y^2) = y^2$