

"QUIZ" for Lecture 9

NAME: (print!) Fayed Raza Section: 6

E-MAIL SCANNED .pdf OF COMPLETED QUIZ to DrZcalc3@gmail.com (Attachment: q9FirstLast.pdf) ASAP BUT NO LATER THAN Oct. 5, 8:00pm

1. Find  $\frac{\partial f}{\partial r}$  and  $\frac{\partial f}{\partial s}$  as functions of  $r$  and  $s$ , if

$$f(x, y) = x^2 + 2xy^2 + 2y^3,$$

and the variables are related by  $x = r + 2s$  and  $y = 3r + 2s$ . You do not need to simplify!

$$df = dr + 2s$$

$$\frac{df}{dr} = 2s$$

$$df = 3r + 2s$$

$$\frac{df}{ds} = \frac{1}{3}$$

2. Find  $\frac{\partial z}{\partial x}$  and  $\frac{\partial z}{\partial y}$  if

$$x^2 + y^2 + z^2 = 5xyz + 1$$

$$dx \cdot 2x + y^2 + dz = dz \cdot 5xy + dx \cdot 5zy + 1$$

$$dx \cdot 2x + -1 + x^2 = dz \cdot 5xy - dz \cdot 2z$$

$$\frac{x^2 - 1}{5xy - 2z} = dz \cdot \frac{5xy - 2z}{dx \cdot 5xy - 2z}$$

$$\frac{dx \cdot x^2 y +}{dx}$$

$$\frac{dz}{dx} = \frac{x^2 y + x^2 - 1}{5xy - 2z}$$

$$x^2 + 2y dy + 2z dz = dz \cdot 5xy + dx \cdot 5zy + 1$$

$$x^2 - 1 = dy \cdot 5z - 2y dy - 2z dz + dz \cdot 5xy$$

$$\frac{x^2 - 1}{5yz - 2xy} = dx + dz$$

$$\frac{x^2 - 1 - 2xy}{5yz - 2xy} = dx$$