NAME: (print!) Brianna Patnaude _____ Section: 22

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

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

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

$$\cancel{f(r,s) = (r+2s)(r+2s) + 2(r+2s)(3r+2s)(3r+2s) + 2}$$

$$f(r,s) = (r+2s)^2 + 2(r+s)(3r+2s)^2 + 2(3r+2s)^3$$
$$(2r+2s)$$

$$\frac{df}{dr} = 2(r+2s) + \left[(2)(3r+2s)^2 + (2r+2s) \times 2(3r+2s) \times (3)\right]$$

$$+ 6(3r+2s)^2 \times 3$$

$$\frac{df}{ds} = 2(r+2s)(2) + \left[(2)(3r+2s)^2 + (2r+2s) \cdot 2(3r+2s) \times (2)\right]$$

$$+ 6(3r+2s)^2 \times 2$$

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

$$x^2 + y^2 + z^2 = 5xyz + 1 \quad .$$

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

$$\frac{dz}{dx} = -2x^2$$

$$\frac{dz}{dx} = -2y^2$$