

"QUIZ" for Lecture 9

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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!

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

$$\frac{df}{dr} = 189r^2 + 2r + 312rs + 124s^2 + 4s$$

$$\frac{df}{ds} = 156r^2 + 248rs + 4r + 8s + 96s^2$$

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

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

$$\frac{dz}{dx} = \frac{5yz - 2x}{2z - 5xy}$$

$$\frac{dz}{dy} = \frac{5xz - 2y}{2z - 5xy}$$