Name: _____ Sort #: _____

Worksheet 8

Differentials & The Chain Rule MATH 2210, Fall 2018

1. Use the Chain Rule to find $\dfrac{\partial w}{\partial s}$ and $\dfrac{\partial w}{\partial t}$ for

$$w = xyz, \quad x = s + t, \quad y = s - t, \quad z = st^2$$

2. Differentiate implicitly to find the first partial derivatives of z for

$$e^{xz} + xy = 0$$

3. If $z = 5x^2 + y^2$ and (x, y) changes from $(1, 2)$ to $(1.05, 2.1)$, compare the values of Δz and dz.

4. Compute $\dfrac{\partial g}{\partial s}$ at $(t, s) = (1, 2)$ if

$$g(x, y) = x^2 - y^2, \quad x = t^2 + s^2, \quad y = t^3 - 2s$$