



ID number:

November 8, 2015

Section:

Quiz 6 (30 min)

Exercise 1: (2 points)

Assume

$$\frac{\partial f}{\partial x}(x, y) = xy, \quad \frac{\partial f}{\partial y}(x, y) = \frac{x^2}{2} \quad \text{and} \quad w = f\left(ts^2, \frac{s}{t}\right)$$

Find:

$$\frac{\partial w}{\partial t} \quad \text{and} \quad \frac{\partial w}{\partial s}$$

Exercise 2: (6 points)

The direction of $f(x, y, z)$ at a point P is greatest in the direction of $\mathbf{v} = \mathbf{i} + \mathbf{j} - \mathbf{k}$, and $(D_{\mathbf{v}}f)_P = 2\sqrt{2}$

a) find $(\nabla f)_P$

b) find $(D_{\mathbf{i}+\mathbf{j}}f)_P$

Exercise 3: (2 points)

Let $M = Xe^{Y-Z^2}$, with $X = 2uv$, $Y = u - v$, $Z = u + v$

Find:

$$\frac{\partial M}{\partial u}$$