MAT 175 HOMEWORK #7

DUE NOVEMBER 21 (MONDAY)

Note: *Please indicate you are in* **Section C01**. *Numbering of problems is as in the textbook.*

(12.6.**8**) Let

$$w = x^2 - y\ln(x)$$

with $x = s/t$ and $y = s^2t$.
Find $\frac{\partial w}{\partial t}$ by using the Chain Rule. Express your final answer in terms of s and t.

(12.6.**12**) Let

$$w = e^{xy+z}$$

with $x = s + t$, $y = s - t$, and $z = t^2$.
Find $\frac{\partial w}{\partial t}$ by using the Chain Rule. Express your final answer in terms of s and t.

(12.6.**24**) Let y be the function of x implictly defined by

$$F(x, y) = x^2 \cos y - y^2 \sin x = 0$$

Find dy/dx using the formula

$$\frac{dy}{dx} = -\frac{\partial F/\partial x}{\partial F/\partial y}$$

(12.7.**4**) Find the equation of the tangent plane to the surface

$$x^2 + y^2 - z^2 = 4$$

at the point $(2, 1, 1)$.

(12.7.**14**) Find a point on the surface

$$z = 2x^2 + 3y^2$$

where the tangent plane is parallel to the plane $8x - 3y - z = 0$.