Section 14.3: Additional Problems

1. Find all of the first order partial derivatives for $f(x,y) = \left(x^3 + y^2 e^{3x}\right)^4$

2. Find all of the first order partial derivatives for $f(x,y,z) = \sin(5x)y^z + 4x^3y$.

3. Use implicit differentiation to find z_y.

   $$x^4 y^3 + z^2 e^{2y} = 2y + \tan(4z)$$

4. Find z_x for $\qquad x^2 \sin(x^3 + y^2) + yz^2 = \cos(4z)$