MTH 265, Quiz #19, Fall 2018 Name _____

Instructions: Show all work. Use exact answers unless otherwise asked to round.

1. Use the chain rule to find $\frac{dz}{dt}$ for $z = \sqrt{1 + x^2 + y^2}, x = \ln t\,, y = \cos t$. Write your final answer in terms of t alone. You do not need to simplify.

2. Use the chain rule to find $\frac{\partial z}{\partial t}$ and $\frac{\partial z}{\partial s}$ for $z = e^r \cos\theta\,, r = st, \theta = \sqrt{s^2 + t^2}$. Write your final answers in term of t and s only. You do not need to simplify.

3. Find $\frac{\partial z}{\partial x}$ and $\frac{\partial z}{\partial y}$ for $yz + x \ln y = z^2$ implicitly.