Math 102 – Section 6 Name: _____

Quiz 6 Signature: _____

Let $z = xe^{xy^2/t}$, $x = t^2$, $y = t^3$.

1a. Compute the following:

$\frac{\partial z}{\partial x} =$ $\frac{\partial z}{\partial y} =$ $\frac{\partial z}{\partial t} =$

$\frac{dx}{dt} =$ $\frac{dy}{dt} =$

1b. Express the following using your answers from **Part 1a**:

$$\frac{\partial z}{\partial x} \cdot \frac{dx}{dt} + \frac{\partial z}{\partial y} \cdot \frac{dy}{dt} + \frac{\partial z}{\partial t} =$$

1c. Rewrite your answer in **Part 1b** after substituting x and y in terms of t:

$$\frac{\partial z}{\partial x} \cdot \frac{dx}{dt} + \frac{\partial z}{\partial y} \cdot \frac{dy}{dt} + \frac{\partial z}{\partial t} =$$

2a. Express z in terms of t only by substituting x and y in terms of t:

$z =$

2b. Compute $\frac{dz}{dt}$ directly using your answer in **Part 2a**:

$\frac{dz}{dt} =$

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3. Show that the answers in **Part 1c** and **Part 2b** are the same by circling and connecting the corresponding terms like this: