

Derive the reciprocal rule from the chain rule (Hint start with $1 = \frac{\partial z}{\partial z}$)

Use the chain rule and the reciprocal rule to derive the following:

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

Let $z = z(x, y)$. Starting with the total differential of z , determine the difference between $\frac{dz}{dx}$ and $\frac{\partial z}{\partial x}$. What if $z = z(x)$? What if $z = z(x, y, z)$