

Math 5B: Quiz 2

Solutions

Name _____ Perm # _____ Section: 1 2 3 4

Write your work clearly, and don't forget to do the second question on the other side!

1. The equation

$$e^{xz} + y^2z = 7$$

defines z as an implicit function of x and y . Find $\frac{\partial z}{\partial y}$.

$$\frac{\partial}{\partial y}(e^{xz} + y^2z) = \frac{\partial}{\partial y}(7)$$

$$e^{xz} \frac{\partial}{\partial y}(xz) + 2yz + y^2 \frac{\partial z}{\partial y} = 0$$

$$e^{xz} x \frac{\partial z}{\partial y} + y^2 \frac{\partial z}{\partial y} = -2yz$$

$$(xe^{xz} + y^2) \frac{\partial z}{\partial y} = -2yz$$

$\frac{\partial z}{\partial y} = - \frac{-2yz}{xe^{xz} + y^2}$
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