

# Math 233 - Quiz 4

October 21, 2021

Name \_\_\_\_\_

Score \_\_\_\_\_

Show all work to receive full credit. Supply explanations when necessary. This quiz is due October 26.

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1. (2 points) Let  $f(x, y, z) = \sec(x^2y) - \tan(x^3yz^2)$ . Find  $f_x$  and  $f_z$ .

2. (3 points) Let  $g(x, y) = ye^{2x} - \cos(2x - 3y)$ . Determine all four second partial derivatives.

*Turn over.*

3. (3 points) Use the definition of differentiability to show that  $f(x, y) = 2y^2 - xy$  is differentiable everywhere in  $\mathbb{R}^2$ .

4. (2 points) Let  $F(x, y) = 4y^2 + x^2y - 2xy$ . Use differentials to approximate  $\Delta z$  when  $(1, -1)$  changes to  $(1.03, -1.02)$ .