$\underline{\text{Math 233 - Homework 4}}$

April 1, 2021

Name ______

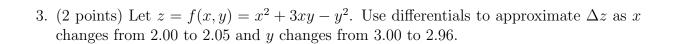
The following problems are from the suggested homework. Show all work to receive full credit. Supply explanations when necessary. This assignment is due April 8.

1. (2 points) Find the directional derivative of f at P in the direction of \vec{v} .

$$f(x, y, z) = y^2 + xz$$
, $P(1, 2, 2)$, $\vec{v} = \langle 2, -1, 2 \rangle$

2. (2 points) Find an equation of the plane tangent to the graph of $z = x^2 - 2xy + y^2$ at the point P(1, 2, 1).

Turn over.



4. (2 points) Find the critical points of
$$f(x,y) = 15x^3 - 3xy + 15y^3$$
.

5. (2 points) Find and classify the critical points of
$$f(x,y) = 9 - x^4y^4$$
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