

Math 241: Quiz 7

Show ALL Work

Name _____

1. Calculate an equation for the tangent plane to the surface

$$2(x - 2)^2 + (y - 1)^2 + (z - 3)^2 = 10$$

at the point $(3, 3, 5)$.

Equation of tangent plane \mathcal{P} :

2. Let $f(x, y) = x^2 - y^2 + 1$, and let P be the point $(0, 1)$. There are infinitely many different values for the directional derivative of $f(x, y)$ at the point P (since there are infinitely many directions that can be used to compute the directional derivative). Which of these is *minimal*? In other words, what is the least value of the directional derivative of $f(x, y)$ at the point P ?

Least value of directional derivative at P :