

MATH 112A Review: Geometric meaning of gradient and Linearization

Let $f(x, y) = xy^2$.

1. What is the gradient of f at the point $(0, 1)$?
2. What direction increases the fastest from the point $(0, 1)$ and what is the rate of change in the same direction?
3. What is the linearization of f at the point $(0, 1)$?