

Math 53 (Multivariable Calculus), Section 102 & 108

Week 7, Friday

Oct 7, 2022

For the other materials: seewoo5.github.io/teaching/2022Fall

1. Find the directions in which $f(x, y) = 4y\sqrt{x}$
 - (a) increases most rapidly at $(4, 1)$
 - (b) decreases most rapidly at $(4, 1)$
 - (c) has zero change at $(4, 1)$
2. Find all points at which the direction of fastest change of the function $f(x, y) = x^2 + y^2 - 2x - 4y$ is $\mathbf{i} + \mathbf{j}$.
3. Find equations of the tangent plane and the normal line to the surface $xy^2z^3 = 12$ at a point $(3, 2, 1)$.