WRITE YOUR NAME:

MAC 2313 B51 Spring 2024

Written homework #6

Due Tuesday February 20th, in Canvas

Question 1. Given $z = x \sin y$, $x = t^2$, and $y = 4t^3$, find dz/dt.

Question 2. Given $z = (x + 2y)^{10}$, $x = \sin^2 t$, and $y = (3t + 4)^5$, find dz/dt.

Question 3. Compute the gradient of the function $f(x, y) = 2 + 3x^2 - 5y^2$ and evaluate it at the point $(2, -1)$.

Question 4. Compute the directional derivative of the function $f(x, y) = x^2 - y^2$ at the point $(-1, -3)$ in the direction of $\langle 3/5, -4/5 \rangle$.