Math 53 Quiz 5

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Name: _____

Time (circle one): 12:10 - 1:00 3:10 - 4:00

Let $f(x, y) = x^3 - 3x + y^2$ and consider the level curve $f(x, y) = 1$.

a. (2 pts) What is the gradient $\vec{\nabla} f$ and $(x, y) = (0, 1)$?

b. (3 pts) Write an equation for the line parallel to $\vec{\nabla} f$ through the point $(0, 1)$.

c. (3 pts) Write an equation for the line perpendicular to $\vec{\nabla} f$ through the point $(0, 1)$.

d. (2 pts) Sketch both lines on the following graph of the level curve $f(x, y) = 1$.
You must label which line is which.