Name: _____ **Quiz 2**

Math 251 Calculus III – Crawford **01 March 2016**

Books, notes (in any form), and calculators are not allowed. *Show all your work.* Good Luck!

1. (4 pts) Reduce the following equation to one of the standard forms and classify the surface.
[ellipsoid, cone, elliptic paraboloid, hyperboloid of one sheet, hyperboloid of two sheets, hyperbolic paraboloid].

$x^2 + 4x - y^2 - 4z^2 + 4 = 0$

2. (5 pts) Find the limit, if it exists. If it does not exist, clearly indicate the reason why. [Simplify.]

$$\lim_{t \to 0} \left\langle 3e^{-4t}, \cos(2t), \frac{\sin(5t)}{t} \right\rangle$$

3. (6 pts) Find a parametric equation for the tangent line to the curve with the given parametric equations at the specified point.

$x = t^2 + 3, \quad y = 2\sqrt{t}, \qquad z = \ln(t^2); \qquad (4, 2, 0)$

4. (5 pts) Evaluate the following integral for the <u>*two-dimensional*</u> vector-valued function.

$$\int 2t^3\mathbf{i} + \sin(2t)\mathbf{j}\, dt$$