

QUIZ 3 MATH 251-510

LAST NAME _____ FIRST NAME _____

On my honor, as an Aggie, I certify that the solution submitted by me on 10th of February 2011 is my own work. I had neither given nor received unauthorized aid on this work.

Signature: _____

Due THURSDAY 2/10/2011 at the beginning of class.

- If turned in later than 10 minutes into class, 5 points off. No papers will be accepted after class.
- If you turn it in to my office (Milner 324), place it in my mailbox (Milner 130) or e-mail a PDF-version to me, make sure you do it before 2:00pm, Thursday 2/10/2011.
- You **MUST** show **ALL** your work to get full credit. Just writing the answers down is not enough.
- Your work must be neat, easy to follow.
- You may use notes and textbook, but not the help of anything else.
- **BOX YOUR FINAL ANSWERS.**

1. Find and sketch the domain of the function $z = \ln(36 - x^2 + y^2)$.

2. Classify the surface (reduce the equation to one of the standard forms if necessary) and sketch it (a perfect picture is not required, just sketch). Your sketch should be recognizable as the proper type of surface that has the correct orientation along the correct axis and be in the proper place on the correct axis.

(a) $x^2 + y^2 + 4z^2 = 1$;

(b) $x^2 + z^2 - 2x - y - 6z - 8 = 0$.

3. Write down the vector function for the given curve (indicate the range of a parameter):
- (a) line segment starting at $A(30, 20, 10)$ and ending at $B(20, 40, -20)$.

(b) a unit circle lying on the plane $z = -1$ and centered on the z -axis.

4. Identify the level curves for each of the following functions. *You don't need to sketch the graph just identify the type of curve (line, hyperbola, etc.):*

(a) $f(x, y) = 2x^2 - y$

(b) $f(x, y) = \ln(x^2 + y^2)$

5. Let C be the curve with equations $x(t) = 8 - t^3, y(t) = 4t - 2, z(t) = e^{t-1}$.

(a) Find the point(s) where C intersects the xz -plane;

(b) Find parametric equations of the tangent line to C at $(7, 2, 1)$.