STAPLE YOUR WORK

QUIZ 2 (Take-home) MATH 221

LAST NAME_____ FIRST NAME_____

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

Signature: _____

Due Wednesday 02/29/13 at the beginning of class (recitation).

- YOUR WORK MUST BE NEAT, EASY TO FOLLOW.

- You may use notes and textbook, but not the help of anything else.

Complete the notes below in the same way we did in class (find traces, name them(parabola, hyperbola etc). Find intercepts if required). This quiz covers problems 4,5,9 from your notes (section 11.5). Make sure to show the traces from the tables in your rough sketches.

- Hyperboloids: There are two types:

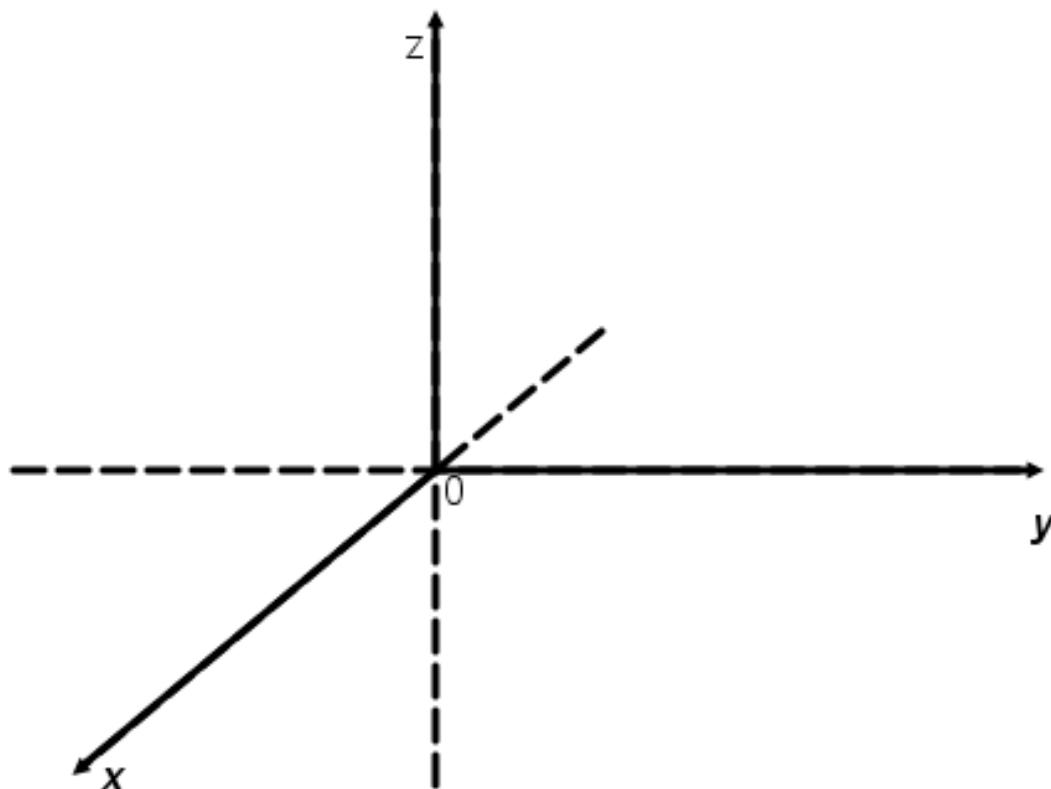 - *Hyperboloid of one sheet.*
    Standard equation:
    $$\frac{x^2}{a^2} + \frac{y^2}{b^2} - \frac{z^2}{c^2} = 1$$

    EXAMPLE 1. *Sketch the hyperboloid of one sheet*
    $$x^2 + y^2 - \frac{z^2}{9} = 1$$

Plane	Trace
$z = 0$	
$z = \pm 3$	
$x = 0$	
$y = 0$	

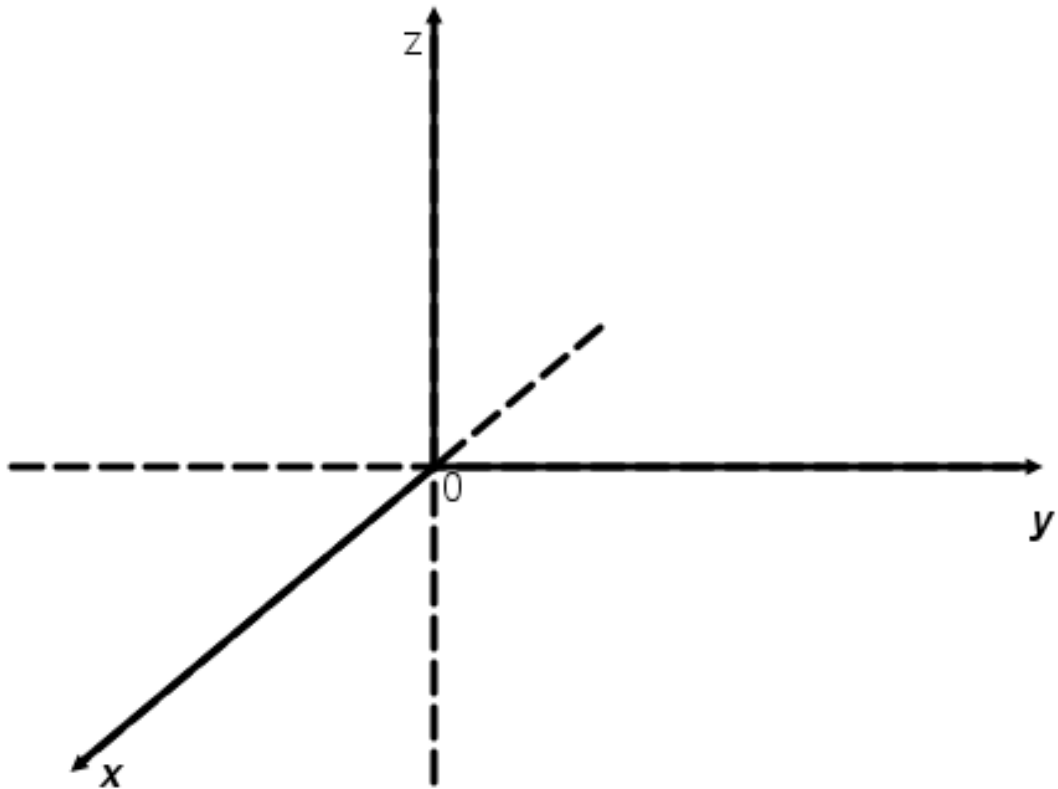– *Hyperboloid of two sheets.*

Standard equation:

$$-\frac{x^2}{a^2} - \frac{y^2}{b^2} + \frac{z^2}{c^2} = 1$$

EXAMPLE 2. *Sketch the hyperboloid of two sheet*

$$-x^2 - \frac{y^2}{9} + z^2 = 1$$

Solution Find z-intercepts: if $x = y = 0$ then $z =$

Plane	Trace
$z = \pm 2$	
$x = 0$	
$y = 0$	

- Quadric cylinders: There are three types:

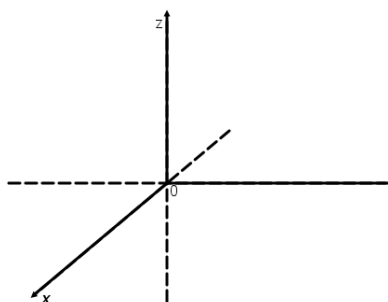| Elliptic cylinder:	Hyperbolic cylinder:	Parabolic cylinder:

– Standard equation:

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$$

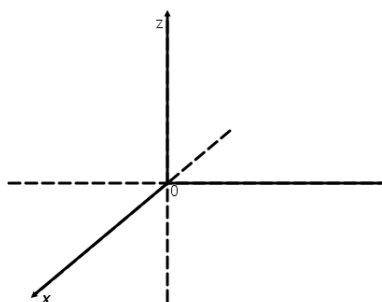**EXAMPLE 3.** *Sketch elliptic cylinder*

$$x^2 + \frac{y^2}{4} = 1$$

– Standard equation:

$$\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$$

EXAMPLE 4. *Sketch hyperbolic cylinder*

$$x^2 - y^2 = 1$$

– Standard equation:

$$y = ax^2$$

EXAMPLE 5. *Sketch parabolic cylinder*

$$y = -x^2$$