3 Quiz 2 – 3D graphing (32 points)   Period: _____

_____ has depth.

NO CALCULATORS

1. Identify each of the quadric surfaces by name. (1 pts each) Be specific!

a) $x^2 + 5x + y^2 - y = 12$ a) _____

b) $y^2 - z^2 = x + 3$ b) _____

c) $(x - 2)^2 + (y + 4)^2 + 4(z - 10)^2 = 4$ c) _____

d) $3z^2 + 2y^2 = x$ d) _____

e) $xy = 15$ e) _____

2. For each of the following figures, (1) make a sketch, and (2), write an equation.

a) An elliptical paraboloid that hits the origin and opens along the negative y-axis.   (4 pts)

b) A parabolic cylinder that hits the points (0, 0, 5) is parallel to the y=axis. (4 pts)

c) An ellipsoid that has a circle as its xy trace, and is longest in the z-direction. (4 pts)

3. Sketch each of the following 3D surfaces. Then identify it by its correct name. (3 pts)

a) $-x + 3y = 15$

b) $x^2 + \dfrac{z^2}{16} - \dfrac{y^2}{9} = 1$

c) $\dfrac{x^2}{4} + (y + 3)^2 = \dfrac{z}{10}$

name: _____

name: _____

name: _____

4. The **intersection** of the graph $x^2 + z^2 = y^2$ (double cone, extending in the y-direction) and some plane results in a hyperbola. What is a possible equation of the plane? (2 pts)

5. The **intersection** of the graph $x^2 + z^2 = y^2$ and some plane results in a circle. What is a possible equation of the plane? (2 pts)

6. The **intersection** of the graph $x^2 + z^2 = y^2$ and some plane results in a parabola. What is a possible equation of the plane? (2 pts)