Math 2450 Homework # 2
Due: Thursday, September 3

Name _____

1. Problems 9.7 Quadric Surfaces, p. 740. Match the equations with the graphs:

   3. _____

   4. _____

   5. _____

   6. _____

   7. _____

   8. _____

   9. _____

   10. _____

   11. _____

   12. _____

   13. _____

   14. _____

2. Identify and describe the translated quadric surface, where the center is not at the origin. Find the center, state whether the surface is a cone, paraboloid, hyperboloid of one or two sheets, ellipsoid, hyperbolic paraboloid or sphere, and identify the axis (axes), if appropriate. Then sketch.

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

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

3. Find the distances.

   (a) Between the point $P = (1, 0, -2)$ and the plane $x + y - z = 2$, $d = \dfrac{|Ax_0 + By_0 + Cz_0 + D|}{\sqrt{A^2 + B^2 + C^2}}$.

   (b) From the point $P = (1, 0, 1)$ to the line $\dfrac{x-1}{3} = \dfrac{y+1}{1} = \dfrac{z-2}{2}$, $d = \dfrac{\|\vec{v} \times \vec{QP}\|}{\|\vec{v}\|}$.