Problem Set Week 12 and 13

1. Sketch the graphs of the following cylindrical surfaces
    a. $x^2 + z^2 = 25$
    b. $z = 2x^2 - y$
    c. $y = sin\, x$

2. Sketch $z = y^2$

3. Sketch the ellipsoid using the trace: $2^2x^2 + 3^2y^2 + 5^2z^2 = 1$.

4. Sketch and describe the trace $x^2 + 2^2y^2 = \frac{z}{5}$.

5. Identify the surfaces represented by the given equations
    a. $16x^2 + 9y^2 + 16z^2 = 144$
    b. $9x^2 - 18x + 4y^2 + 16y - 36z + 25 = 0$

6. Sketch and name $z = x^2$

7. Use trace to identify and to sketch the quadric surface with equation $x^2 + \frac{y^2}{9} + \frac{z^2}{4} = 1$.

8. Use trace to identify and to sketch the quadric surface with equation $z = 4x^2 + y^2$.

9. Use trace to identify and to sketch the quadric surface with equation $z = y^2 - x^2$.

10. Use trace to identify and to sketch the quadric surface with equation $\frac{x^2}{4} + y^2 - \frac{z^2}{4} = 1$.