Math 2153 – Recitation 6 October 1, 2015

1. Graph the yz-trace of the function
$$x^2 - 16y^2 + 4z^2 = 64$$

2. Give an equation for the osculating plane to the vector-valued function
$$\mathbf{r}(t) = t^3\,\mathbf{i} + t^2\,\mathbf{j} + t\,\mathbf{k}.,$$
at $t = 1$

3. Graph the level -1, 0, and, 1 curves for the function
$$f(x, y) = x^2 - 4y^2$$

4. Let $f(x, y) = \ln(x - y^2)$
   (a) What is the domain D of f?
   (b) What are the interior points of D?
   (c) What are the boundary points of D?
   (d) Is D open, closed, both or neither?

5. Compute
$$\lim_{(x,y)\to(0,0)} \frac{y}{\sqrt{x^2 - y^2}}$$
or show that the limit does not exist.

6. Compute
$$\lim_{(x,y)\to(0,0)} \frac{|xy|}{xy}$$
or show that the limit does not exist.