**Mat 397 Spring 2016 Quiz 3** Name: _____ **Score:** ___/10

**1.** (5 Points) Consider the quadratic surface $x^2 + z^2 - y^2 = 4$.
(a) Sketch the trace in the $xz$-plane

(b) Sketch the trace in the $xy$-plane.

(c) Sketch the surface.

**2.** (2 Points.) For the vector valued function $\vec{r}(t) = \left\langle 2\cos 3t,\ \frac{t^2-4}{t+2},\ \frac{\sin t}{5t} \right\rangle$, compute $\lim_{t\to 0} \vec{r}(t)$.

(b) If $\vec{r}(t) = \left\langle 2e^t,\ \cos(t^2),\ 3+\sin 5t \right\rangle$, find the derivative $\frac{d\vec{r}}{dt} = \vec{r}\,'(t)$