Quiz 2 - Solutions

MAC 2313 Fall 2006

Full Name:_____ Score: _____

Show all of your work for full credit.

1. Find the limit,

$$\begin{aligned}\lim_{t\to 0^+} \langle \cos t, \sin t, t\ln t\rangle &= \left\langle \lim_{t\to 0^+}\cos t, \lim_{t\to 0^+}\sin t, \lim_{t\to 0^+} t\ln t\right\rangle \\ &= \langle 1, 0, 0\rangle\end{aligned}$$

   where $\lim_{t\to 0^+} t\ln t = \lim_{t\to 0^+}\frac{\ln t}{1/t}$, and L'Hospital's rule gives the limit of 0

2. Sketch the curve with the vector equation

$$\vec{r}(t) = \left\langle t^4+1, t\right\rangle$$

   First we note that the parametric equations are $x = t^4+1$, $y = t$, so that we can eliminate the parameter t and obtain the equation $x = y^4+1$.