Name: May 28, 2015 MAC 2313.8326 Cyr

Quiz 3 You must show all work to receive full credit!!

Problem 1. (3 pts) Solve the initial value problem $\mathbf{r}'(t) = \left\langle \frac{t}{\sqrt{t^2+5}}, \frac{1}{t-1}, e^{t-2} \right\rangle$ with $\mathbf{r}(2) = \langle 8, -3, 2 \rangle$.

Problem 2. (4 pts) Find the equation of the tangent line to the graph of $\mathbf{r}(t) = \langle \cos(2t), \sin(2t), 2t \rangle$ at $t = \frac{\pi}{3}$.

Problem 3. (3 pts) Calculate the arc length of the curve $\mathbf{r}(t) = \langle \cos(2t), \sin(2t), 2t \rangle$ on the interval $0 \le t \le 2\pi$.