Name: _____

Problem 1 (10 points)

Compute the length of the curve $\mathbf{r}(t) = \langle 3\cos t, 4t, 3\sin t \rangle$ where $0 \le t \le 2$.

Problem 2 (10 points)

If the acceleration of a particle at time t is given by $\mathbf{a}(t) = \langle e^t, 2t, 3t^2 \rangle$ and the velocity of the particle at time $t = 0$ is the zero vector, what is the velocity of the particle at time $t = 2$?