Math 224 Quiz 7 Name: _____

February 10, 2004

Show all work for credit.

1. Find the arc-length of $\mathbf{r}(t) = \begin{bmatrix} t^2 \\ \sin t - t\cos t \\ \cos t + t\sin t \end{bmatrix}$ for $0 \le t \le \pi$.

2. Find the vectors $\mathbf{T}$, $\mathbf{N}$, and $\mathbf{B}$ at the point $(1, 2/3, 1)$ for $\mathbf{r}(t) = \langle t^2, \frac{2}{3}t^3, t \rangle$.