Math 397 Spring 2016 **Quiz 9** Name_____
Section 4

Show all work. Incomplete answers may receive little or no credit.

1. Find r(t) if $\mathbf{r}'(t) = 2\mathbf{i} + 6t\mathbf{j} - 4\sin t\,\mathbf{k}$ and $\mathbf{r}(0) = \mathbf{i} + 2\mathbf{j} + \mathbf{k}$ at time $t = 0$.

2. Suppose a curve in 3-space is given by $\mathbf{r}(t) = \mathbf{i} + t^2\mathbf{j} + t^3\mathbf{k}$

(a) Find $\mathbf{T}(t)$ for the curve above.

(b) State the formula you would use to find $\mathbf{N}(t)$. **Do not actually find $\mathbf{N}(t)$!**

(c) State the formula you would use to find $\mathbf{B}(t)$. **Do not actually find $\mathbf{B}(t)$!**

(d) Find the length of the curve for $0 \le t \le 2$. Note: You have already done a lot of the work.