Math 233 - Quiz 5

Name _____

September 28, 2023

Score _____

Show all work to receive full credit. Supply explanations when necessary.

1. (2 points) Let $\vec{r}(t) = t^2\,\hat{\imath} + t^3\,\hat{\jmath} + t\,\hat{k}$. Compute $\hat{T}(t)$.

2. (3 points) What are the three important characteristics of the unit tangent vector?

3. (4 points) Let $\vec{r}(t) = (4t^2 + 3)\,\hat{\imath} + 5\,\hat{\jmath} + (t^2 + 7)\,\hat{k}$. Reparameterize r in terms of the arc length parameter starting from $t = 0$.

4. (1 point) Let $\vec{R}(s)$ be your reparameterization above. What is the magnitude of $\vec{R}'(s)$?