

Name: _____

1. (4 points) Find the arclength of $\mathbf{r}(t) = t^2\mathbf{i} + t\mathbf{j} + \frac{4}{3}t^{3/2}\mathbf{k}$ between $t = 2$ and $t = 5$.

2. Suppose a particle moves as

$$\mathbf{r}(t) = \langle -1/t, t^2, e^t \rangle$$

(a) (3 points) Find the particle's velocity.

(b) (3 points) Find the particle's acceleration.