Name:

Math 208, Section 3

Quiz number 9

Show all work. How you get your answer is just as important, if not more important, than the answer itself. If you think it, write it!

A particle is moving through 3-space along the parametrized curve

$$\vec{r}(t) = (\sin t, \cos t, 2t^{3/2})$$

Find:

(a) the velocity of the particle at time t,

(b) the acceleration of the particle at time t, and

(c) the length of the curve traced out by the particle between $t = 0$ and $t = 1$.