

## Section 3.4 Problems

Text: 157, 163, 173, 174-177 (present as one problem), 181

Additional problems:

1. Find the position  $\mathbf{r}(t)$  and velocity  $\mathbf{v}(t)$  vectors of a particle with acceleration

$$\mathbf{a}(t) = 2\mathbf{i} + 4t\mathbf{j}$$

and initial position and velocity

$$\mathbf{v}(0) = 3\mathbf{i} - \mathbf{j}, \quad \mathbf{r}(0) = \mathbf{j} + \mathbf{k}.$$

2. The position of a particle is given by

$$\mathbf{r}(t) = \langle t^2, 5t, t^2 - 16t \rangle.$$

Determine the time  $t$  where the speed of the particle is minimized.