Physics 101 Rec
Quiz#3
Chapter 4a

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ne: _____ Key _____ Id: _____ Sect: _____

rticle start from the origin at t = 0 with an initial velocity of $20\hat{i} - 15\hat{j}$ (m/s). The particle

es in the *xy* plane with an acceleration of $4.0\hat{i}$ (m/s^2).

Calculate the **velocity** and **speed** of the particle at t = 5.0 s.

$$\vec{v} = \vec{v_o} + \vec{a}\,t$$

$$= (20\hat{i} - 15\hat{j}) + (4\hat{i} + 0\hat{j}) \times 5$$

$$= 40\hat{i} - 15\hat{j} \quad (m/s)$$

$$|\vec{v}| = \sqrt{40^2 + 15^2} = 42.7 \; m/s$$

What is the **position** of the particle at t = 5.0s.

$$\vec{r} - \cancel{\vec{r_o}}^{\,0} = \vec{v_o}\,t + \frac{1}{2}\vec{a}\,t^2$$

$$= (20\hat{i} - 15\hat{j}) \times 5 + \frac{1}{2}(4\hat{i} + 0\hat{j}) \times 25$$

$$= 150\hat{i} - 75\hat{j}$$