

## Quiz 7

$$1. \quad \vec{r}(t) = \langle 2\cos 3t, 2\sin 3t, 4t - t^2 \rangle \Rightarrow$$

$$\vec{v}(t) = \langle -6\sin 3t, 6\cos 3t, 4 - 2t \rangle$$

$$\vec{a}(t) = \langle -18\cos 3t, -18\sin 3t, -2 \rangle$$

$$2. \quad \vec{r}(t) = \int \langle 2\cos 3t, 2\sin 3t, 4t - t^2 \rangle dt$$

$$= \langle \frac{2}{3}\sin 3t, -\frac{2}{3}\cos 3t, 2t^2 - \frac{1}{3}t^3 \rangle + \vec{C}$$

$$\vec{r}(0) = \langle 0, 0, 0 \rangle \Rightarrow \vec{C} = \langle 0, \frac{2}{3}, 0 \rangle$$

$$\vec{r}(t) = \langle \frac{2}{3}\overset{so}{\sin 3t}, \frac{2}{3} - \frac{2}{3}\cos 3t, 2t^2 - \frac{1}{3}t^3 \rangle.$$