

$$\frac{2}{68} \begin{cases} x = 3 \cos 4t; & \dot{x} = -12 \sin 4t; & \ddot{x} = -48 \cos 4t \\ y = 2 \sin 4t; & \dot{y} = 8 \cos 4t; & \ddot{y} = -32 \sin 4t \end{cases}$$

At time  $t = 1.4$  sec:

$$\begin{cases} x = 2.33 \text{ ft}; & \dot{x} = 7.58 \text{ ft/sec}; & \ddot{x} = -37.2 \frac{\text{ft}}{\text{sec}^2} \\ y = -1.263 \text{ ft}; & \dot{y} = 6.20 \text{ ft/sec}; & \ddot{y} = 20.2 \frac{\text{ft}}{\text{sec}^2} \end{cases}$$

$$r = 2.65 \text{ ft}; \quad v = 9.79 \text{ ft/sec}; \quad a = 42.4 \frac{\text{ft}}{\text{sec}^2}$$

$$\theta_1 = \cos^{-1} \left[ \frac{\underline{a} \cdot \underline{v}}{a v} \right] = \cos^{-1} \left[ \frac{-37.2(7.58) + 20.2(6.20)}{42.4(9.79)} \right]$$

$$\theta_1 = 112.2^\circ \quad \text{Similarly, } \theta_2 = \cos^{-1} \left[ \frac{\underline{a} \cdot \underline{r}}{a r} \right]$$

$$\text{Sketch (not to scale):} \quad = 180^\circ$$

