Example - Le 04

2.137 The rocket is fired vertically and tracked by the radar shown. When $\theta = 60^\circ$, other corresponding measurements give the values of $r = 30,000 \text{ ft}$, $\dot{r} = 70 \text{ ft}/s^2$, and $\dot{\theta} = 0.02 \text{ rad/s}$. Calculate the velocity and acceleration of the rocket at this position.

Ans. $v = 1200 \text{ ft/s}$

$a = 67.0 \text{ ft/s}^2$

(taken from Dynamics, 3rd Edition by Merriam & Kraige)