

Let  $s(t) = 38t - 16t^2$ .

$$\begin{aligned}v(1) &= \lim_{t \rightarrow 1} \frac{s(t) - s(1)}{t - 1} = \lim_{t \rightarrow 1} \frac{(38t - 16t^2) - 22}{t - 1} = \lim_{t \rightarrow 1} \frac{-16t^2 + 38t - 22}{t - 1} \\ &= \lim_{t \rightarrow 1} \frac{(t - 1)(22 - 16t)}{t - 1} = \lim_{t \rightarrow 1} (22 - 16t) = 6\end{aligned}$$

Thus, the instantaneous velocity when  $t = 1$  is 6 ft/ s.