

Pg 334 #50

$$a = -16 \text{ ft/s}^2$$

$$v(t) = -16t + C \text{ ft/s} \quad (\text{most general antiderivative})$$

$$s(t) = -8t^2 + Ct + D$$

$$\text{at } t=0$$

$$s(0) = -8(0)^2 + C(0) + D$$

$$D=0$$

so...

$$s(t) = -8t^2 + Ct$$

$$v_F = 0 = -16T + C$$

$$16T = C$$

$$s_F = 200 = -8T^2 + CT$$

$$200 = -8T^2 + 16T^2$$

$$200 = 8T^2$$

$$T^2 = 25$$

$$T = 5$$

$$C = 16(5)$$

$$C = 80$$

$$* v(t) = -16t + 80$$

$$v_0 = v(0) = -16(0) + 80$$

$$v_0 = 80 \text{ ft/s}$$