

$$\frac{dh}{dt} = \text{velocity} = \frac{\Delta h}{\Delta t}$$

(#7) #8

$$\frac{dV}{dt} = \frac{\Delta V}{\Delta t} = (1)(\text{burn-rate}) - (0.5 \text{ km/s})$$

$$\rightarrow \Delta t \approx 1 \text{ sec}$$

$$\rightarrow \Delta V = V_f - V_0 = [\text{rate}] - \left(\frac{1}{2}\right) \Delta t \approx \text{rate} - \frac{1}{2}$$

$$\Delta V \text{ must always} = 0 - V_{\text{current}}$$

$$(0 - V_c) = \text{rate} - 0.5 \Rightarrow \Delta V + 0.5 = \text{burn-rate}$$

$$v = at \rightarrow V_c = \left(\frac{V_0^2}{2h}\right) \quad \left(\text{b/c } dt \approx 1 \right)$$

$$-(V_c) = (\text{burn-rate} - 0.5)$$

$$-1 \left(\text{rate} - .5 \right) = \frac{V_0^2}{2h}$$

$$\boxed{\text{rate} = \left(\frac{V_0^2}{2h}\right) + 0.5}$$

$$V_0 = -0.5 \text{ km/s}$$

$$\text{rate} = \left(\frac{.25}{2(50)}\right) + 0.5 = 0.5025$$

1

(# velocity velocity)
(# 2 (height))
ship-stal

$$V_f = 0.5 + .0025 = -0.50025$$

$$V_f = \frac{(-.50025)^2}{(49.5)^2} + 0.5 =$$