p.01, Problem #7

$$a = \frac{v^2}{2h}$$

$$g = 0.5$$

Physics

$$V_f^2 = V_0^2 + 2a(\text{displacement})$$

Δh

$V_f = 0$

If $V_1 = -0.5$ and $h = 50$, $a = .0025$

$h = 45 ft, V_0 = ?$

$$.0025 = \frac{V^2}{90} \rightarrow V^2 = 0.225$$

$$V = \pm .47$$

$h = 40 ft$

$$V^2 = .0025(2 \cdot 40) = .2$$

$$V = \pm 0.45 \, km/s$$

$$\frac{.25}{100} = .0025$$

$$0 = V_0^2 + 2(.0025)\frac{50}{2}$$

$$\sqrt{(V_0^2)} = \sqrt{.25}$$

$$-V_0 = \pm 0.5 \, KM/S$$

$$h = 30 ft$$

$$0 = V_0^2 + 2(0.0025)30$$

$$-(V_0^2) = 60(.0025) = .15$$

$$-V_0 = -\sqrt{.15} = -0.39 \, Km/s$$

Original velocity, as height gets lower, must be smaller + smaller for V_f to be zero & the ship to land. So the maximum velocity must be kept between ± 0.5 km/s if the height goes from

$SO \rightarrow O_3$ and we want the ship to land safely.