

$$\boxed{2/43} \quad (a) \quad (g_m)_0 = 5.32 \text{ ft/sec}^2 = \text{constant}$$

$$v^2 = v_0^2 + 2(g_m)_0 (s - s_0) : v^2 = 0^2 + 2(5.32)(750 \cdot 5280)$$

$$v = \underline{6490 \text{ ft/sec}}$$

$$(b) \quad a = -(g_m)_0 \frac{R_m^2}{r^2} = v \frac{dv}{dr} \quad (R_m = \text{moon radius})$$

$$-(g_m)_0 R_m^2 \int_{R_m+h}^{R_m} \frac{dr}{r^2} = \int_{v_0=0}^v v dv$$

$$-(g_m)_0 R_m^2 \left(-\frac{1}{r} \right) \Big|_{R_m+h}^{R_m} = \frac{1}{2} v^2 \Big|_0^v$$

$$v = \sqrt{\frac{2(g_m)_0 R_m h}{R_m+h}} = \sqrt{\frac{2(5.32) \left(\frac{2160}{2} \right) (750) (5280)^2}{\left(\frac{2160}{2} + 750 \right) (5280)}}$$

$$= \underline{4990 \text{ ft/sec}}$$