

2/6

$$a = v \frac{dv}{ds} = -ks^2$$

$$\int_{v_0}^v v dv = \int_{s_0}^s ks^2 ds \Rightarrow v^2 = v_0^2 - \frac{2}{3}k(s^3 - s_0^3)$$

$$\text{Taking positive sign: } v = \left[v_0^2 - \frac{2}{3}k(s^3 - s_0^3) \right]^{1/2}$$

$$\begin{aligned} \text{Numbers: } v &= \left[10^2 - \frac{2}{3}(0.1)(5^3 - 3^3) \right]^{1/2} \\ &= \underline{9.67 \text{ m/s}} \end{aligned}$$