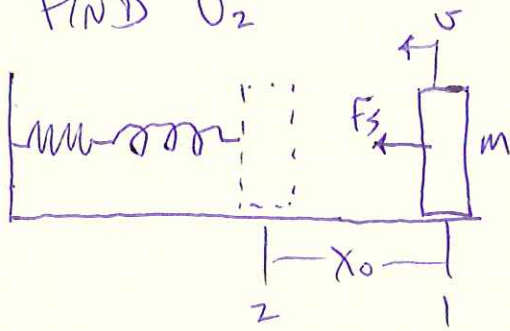


PROB. 13-56

a) FIND  $v_2$



FROM PROB. 13-55,

$$k_e = \frac{k_1 k_2}{k_1 + k_2}$$

AT POINT 1,  $v_1 = 0 : T_1 = \frac{1}{2} m v_1^2 = 0$

$$V_1 = \frac{1}{2} k_e x_0^2$$

AT POINT 2,  $T_2 = \frac{1}{2} m v_2^2$ ,  $V_2 = \frac{1}{2} k_e \cdot 0 = 0$

$$T_1 + V_1 = T_2 + V_2$$

$$0 + \frac{1}{2} k_e x_0^2 = \frac{1}{2} m v_2^2 + 0$$

$$v_2 = \sqrt{\frac{k_e x_0^2}{m}} = x_0 \sqrt{\frac{k_1 k_2}{m(k_1 + k_2)}}$$

b)  $k_e = k_1 + k_2$

$$v_2 = x_0 \sqrt{\frac{(k_1 + k_2)}{m}}$$