$$\frac{1}{2}mv_i^2 + mgh_i = \frac{1}{2}mv_f^2 + mgh_f$$

Conservation of E

KE, PE_g, PE_s

$$\frac{1}{2}mv_i^2 + mgh_i + \frac{1}{2}kx_i^2 = \frac{1}{2}mv_f^2 + mgh_f + \frac{1}{2}kx^2$$

$PE_s = \frac{1}{2}kx^2$

HW

p 33a, go back + do (28, 43a)

Ex 5.8 p133

k spring constant units $\frac{N}{m}$

x amt of stretch/compression

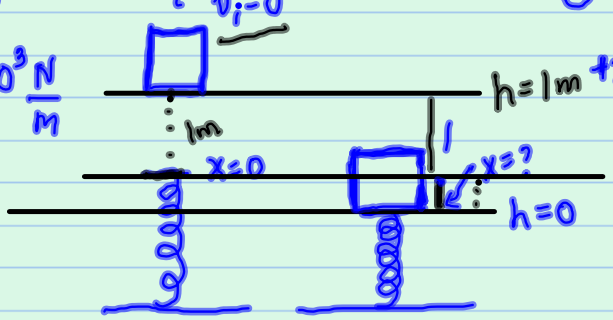
relaxed - equilibrium position

$x = 0$

$v_f = 0$

$k = 1 \times 10^3 \frac{N}{m}$

$m = 1.6\,kg$



① no substi. yet!

② substitute

$$1.6(9.8)(1+x) = \frac{1}{2}(1\times10^3)x_f^2$$

$$15.7(1+x) = 500x_f^2$$

$$15.7 + 15.7x - 500x_f^2 = 0$$

③ solve

$$x = .19\,m$$