HW6-8 Soln)

By moving it *very slowly*, we can ignore any KE effects (KE stays about zero).

$W_N = 0$ (normal force is perpendicular to the path)
Wg - cons
W_{SP} – cons
$W_{fk} = F_{fK}\, d \cos 180^o$
Find the frictional force:
$F_{fK} = \mu_K F_N$
Find the normal force with NII:
$F_N - mg = ma_y = 0 \quad \rightarrow \quad F_N = gm$
$F_{fK} = \mu_K gm$
$W_{fK} = \mu_K gm\, d \cos 180^o = -\mu_K gmd$
$W_H = ? \leftarrow$

$W_H - \mu_K gmd = {}^1/_2 mv_f^2 - {}^1/_2 mv_i^2 + {}^1/_2 kX_f^2 - {}^1/_2 kX_i^2 + mgy_f - mgy_i$
$v_f = v_i = 0$ relaxed $y_f = y_i = 0$

$W_H = \mu_K gmd + {}^1/_2 kX_f^2 = 0.7(10)13(0.2) + ½(300)(0.2^2) =$ 24.2 J