HW6-7 Soln) WE Thm  $W_g - cons$  $W_{SP} - cons$  $W_N = 0$  (normal force is perpendicular to the path)  $W_{fk} = F_{fK} d \cos 180^{\circ}$ Find the frictional force:  $F_{fK} = \mu_K F_N$ Find the normal force with NII:  $F_N - mg = ma_y = 0 \rightarrow F_N = gm$  $F_{fK} = \mu_K gm$  $W_{fk} = \mu \kappa gm d \cos 180^{\circ} = -\mu \kappa gm d$ Then,  $-\mu_{\rm K}mgd = \frac{1}{2}mv_{\rm f}^2 - \frac{1}{2}mv_{\rm i}^2 + \frac{1}{2}kX_{2\rm f}^2 - \frac{1}{2}kX_{2\rm i}^2 + \frac{1}{2}kX_{1\rm f}^2 - \frac{1}{2}kX_{1\rm i}^2$ starts from rest relaxed relaxed Stops  $X_{2f} = [(kX_{1i}^2 - 2\mu\kappa mgd)/k]^{1/2} = [((400)(0.3^2) - 2*0.08*12*10*0.2)/(400)]^{1/2} = \frac{0.28 \text{ m}}{0.28 \text{ m}}$