A) Fri, Nov 11

B) Mon, Nov 14

C) Either is fine

Exam 2

- torque & equilibrium (including force)
- angular kinematics
- momentum

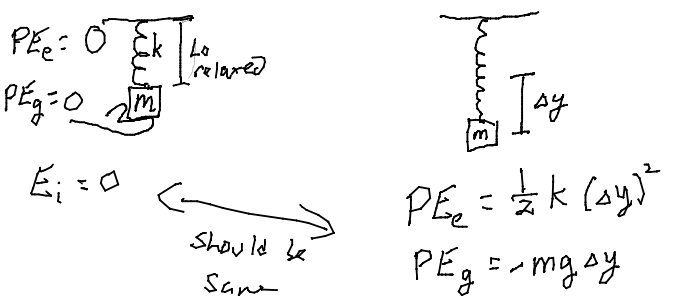
Potential Energy

$$PE_e = \frac{1}{2} k (\Delta L)^2$$

- k : stiffness
- $\Delta L = L - L_0$ amount spring has been stretched or squished

$$PE_g = mgh$$ ← measure height from any reference point we want.

Only ΔPE are physically significant.



$$\frac{1}{2} k (\Delta y)^2 - mg\Delta y = 0$$

$$\frac{1}{2} k \Delta y = mg$$

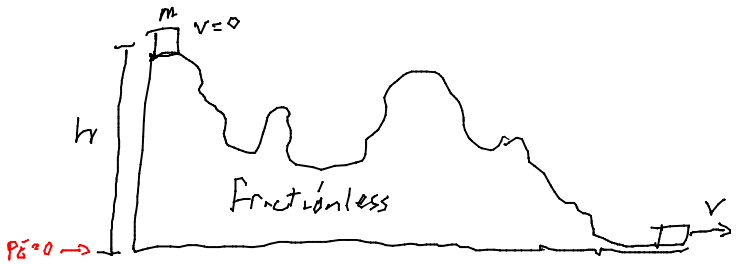
$$\boxed{\Delta y = \frac{2mg}{k}}$$ ← how much spring stretched

$\Delta y \sim m$

more mass, more stretch

$\Delta y \sim \frac{1}{k}$

more stiffness, less stretch



$$E_i = KE + PE$$
$$= 0 + mgh = mgh$$

$$E_f = KE + PE$$
$$\frac{1}{2}mv^2 + 0 = \frac{1}{2}mv^2$$

$W = 0$ (ignore gravity because already have PE)

$$\boxed{E_f = E_i + W}$$

$$\frac{1}{2}mv^2 = mgh + 0$$

$$v^2 = 2gh \rightarrow v = \sqrt{2gh}$$

Doesn't work if $E = mgH + KE > mgh$ so block won't make it over hill