# Ballistic Pendulums Part II

* Find k of the spring.
* Create a procedure for this

Your calc value should work for all 4 positions

Dec 11-7:29 AM

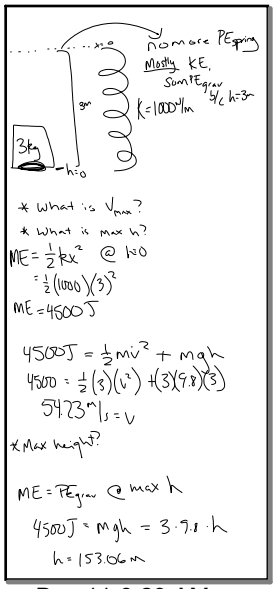
- Conservation of Energy

* In a closed system, energy is converted form to form but never lost or gained

Dec 11-8:20 AM

- Pendulum Problems
- Roller coaster Problems (PE → KE → PE)
- Spring Energy problems

Dec 11-8:21 AM




* what is $V_{max}$?
* what is max h?

$ME = \frac{1}{2}kx^2$ @ h=0

$= \frac{1}{2}(1000)(3)^2$

$ME = 4500\,J$

$4500\,J = \frac{1}{2}mv^2 + mgh$

$4500 = \frac{1}{2}(3)(v^2) + (3)(9.8)(3)$

$54.73\,m/s = v$

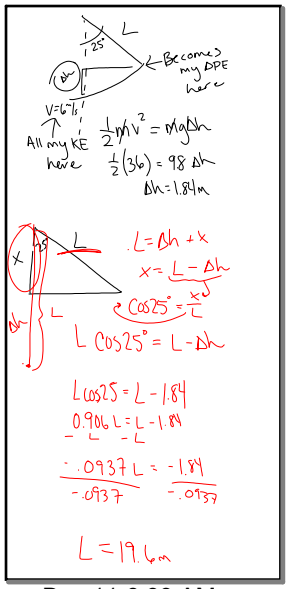
* Max height?

$ME = PE_{grav}$ @ max h

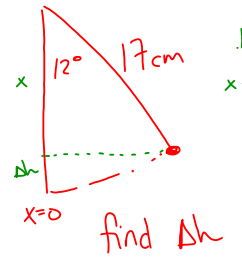
$4500\,J = mgh = 3 \cdot 9.8 \cdot h$

$h = 153.06\,m$

Dec 11-8:23 AM




Dec 11-8:33 AM




$.17 = x + \Delta h$

$x = .17\cos 12°$

$\Delta h = .0037\,m$

find Δh

find V

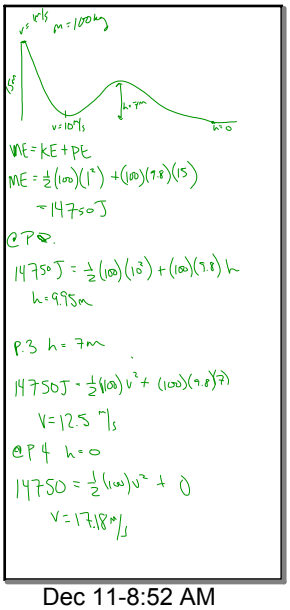
$PE_{lost} = KE_{gained}$

$mg\Delta h = \frac{1}{2}mv^2$

$(9.8)(.0037) = \frac{1}{2}(v^2)$

$V = 0.27\,m/s$

Dec 11-8:45 AM




ME = KE + PE

$ME = \frac{1}{2}(100)(1^2) + (100)(7.8)(15)$

$= 14750\,J$

@ P2

$14750\,J = \frac{1}{2}(100)(10^2) + (100)(7.8)\,h$

$h = 9.95\,m$

P3 $h = 7m$

$14750\,J = \frac{1}{2}(100)v^2 + (100)(7.8)(7)$

$V = 12.5\ m/s$

@ P4 $h = 0$

$14750 = \frac{1}{2}(100)v^2 + 0$

$V = 17.18\ m/s$

Dec 11-8:52 AM