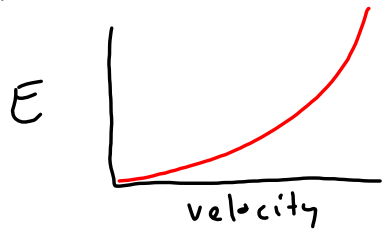


## LEVEL 4 WORK

- Due by Friday, 3/17
- Need to do 3 out of 12 given (or an article)
- "Ok (date)" → good
- "Try again (date)" → redo (ask questions if you have them)

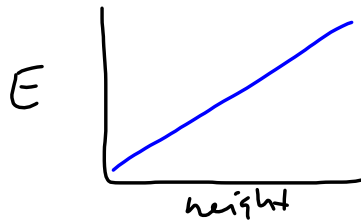
# Energy

From lab:



$E \rightarrow$  kinetic energy

$$E_k = \frac{1}{2}mv^2$$



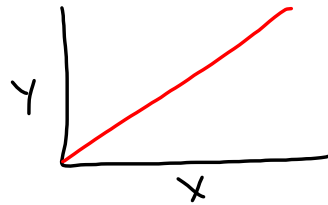
Energy  $\rightarrow$  gravitational potential

$$E_g = mgh$$

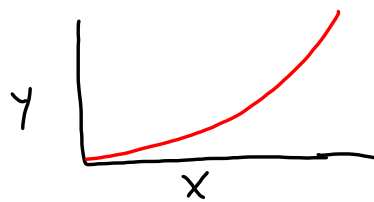
Short math aside:



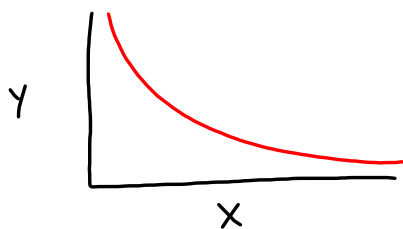
$$y = x^0$$



$$y = x^1$$



$$y = x^2$$

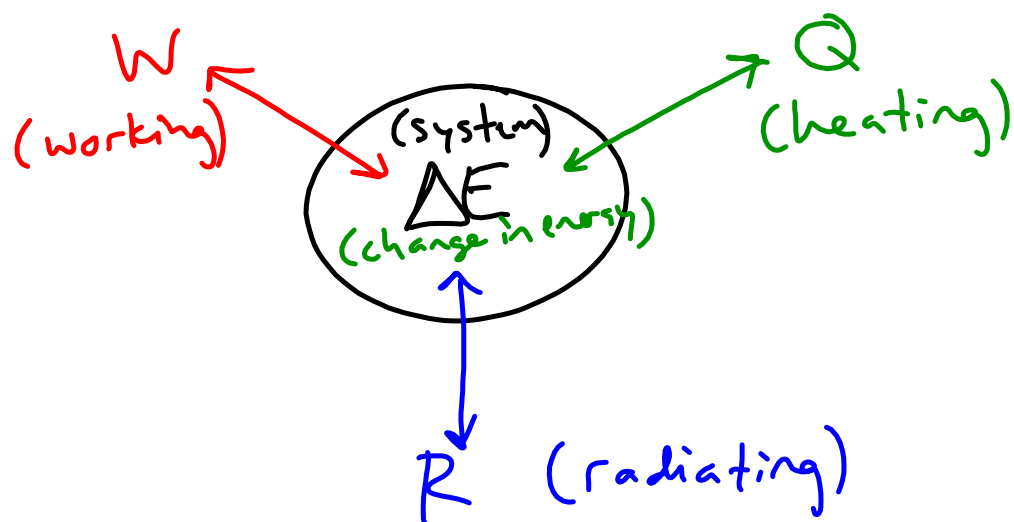


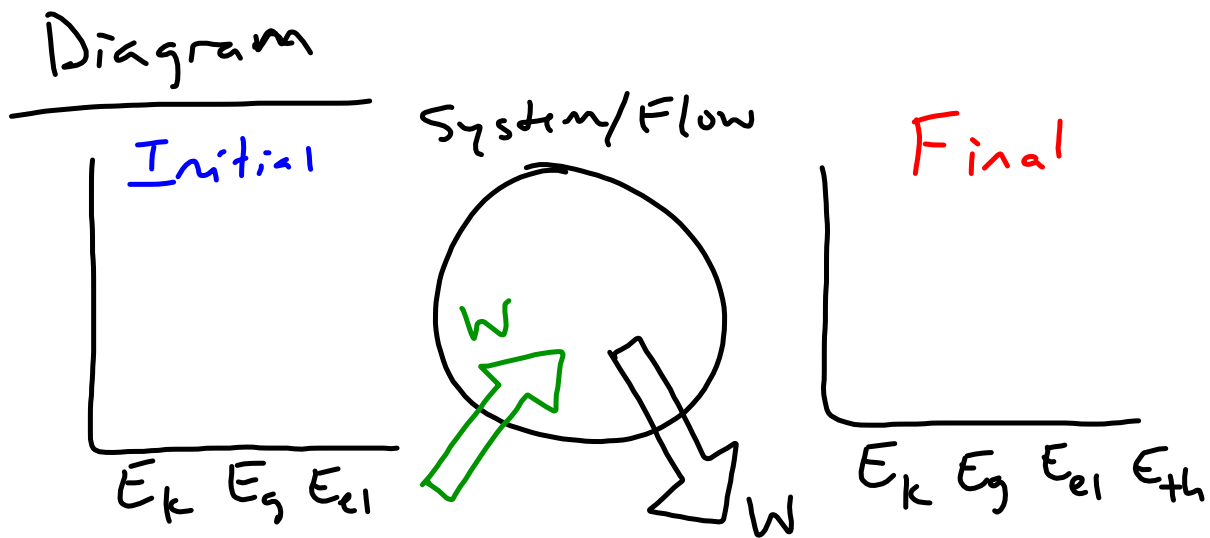
$$y = x^{-1} = \frac{1}{x}$$



$$y = x^{-2} = \frac{1}{x^2}$$

# 1st Law of Thermodynamics





$$E_{ki} + E_{gi} + E_{eli} + W_{in} = W_{out} + E_{kf} + E_{gf} + E_{elf} + E_{th}$$

$E_k \rightarrow$  kinetic energy  $E_k = \frac{1}{2}mv^2$

$E_g \rightarrow$  gravitational potential energy  
 $E_g = mgh$

$E_{el} \rightarrow$  elastic potential energy  
 $E_{el} = \frac{1}{2}k(\Delta x)^2$

$E_{ch} \rightarrow$  chemical potential energy

$E_{th} \rightarrow$  thermal energy (unrecoverable energy lost due to friction or air resistance)

## Worksheet 3

1a)



$$E_{el} = E_k + E_g$$

1b)



$$W = E_k + E_g$$