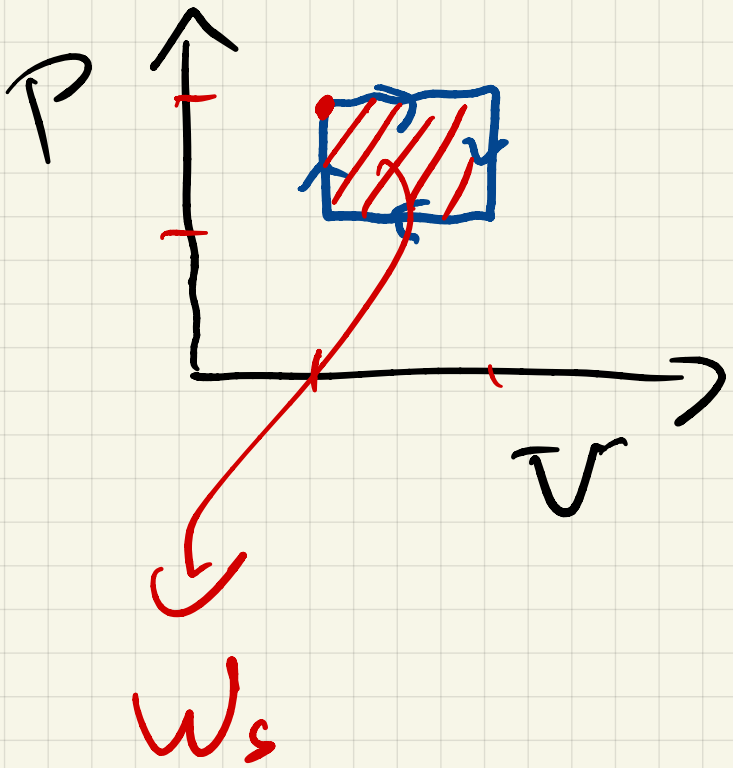
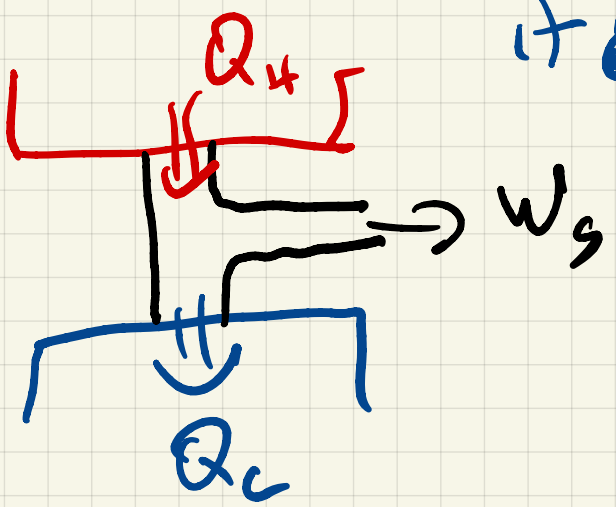
Homework help 2/17/21



$$\Delta E_{th} = -W_s + Q$$

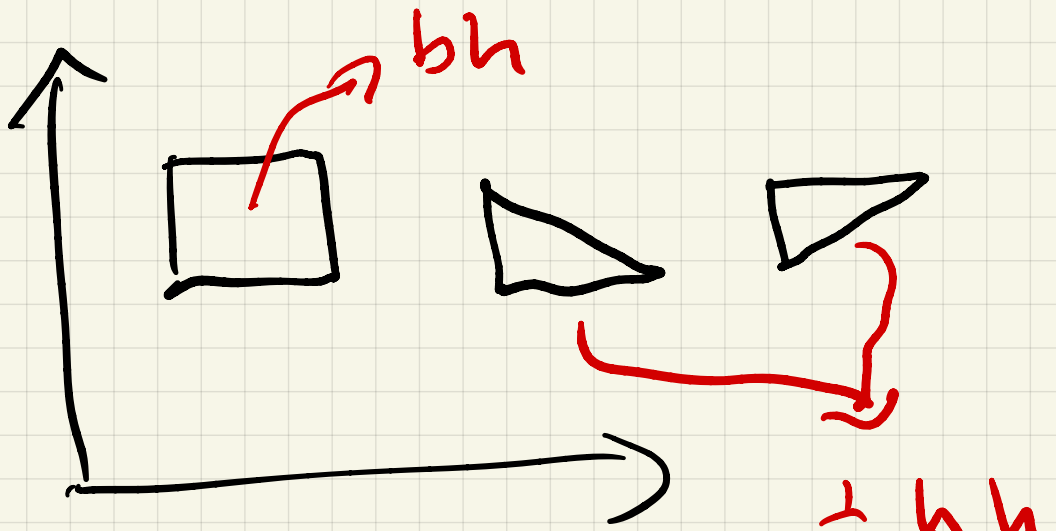
For a cycle

$$Q = W_s$$



IF $Q_H = 200\ J$ & $Q_c = 140 J$

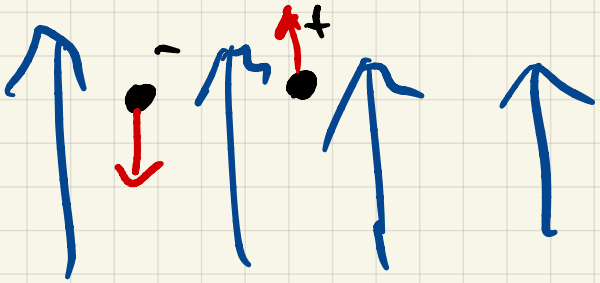
$$Q_H - Q_c = W_s$$

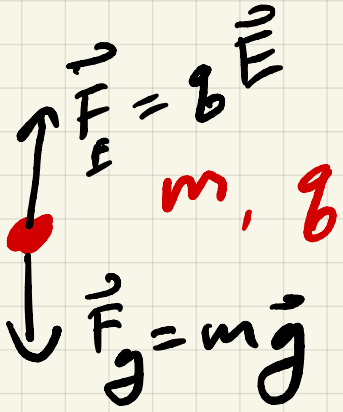


ΔE_{th} W Q

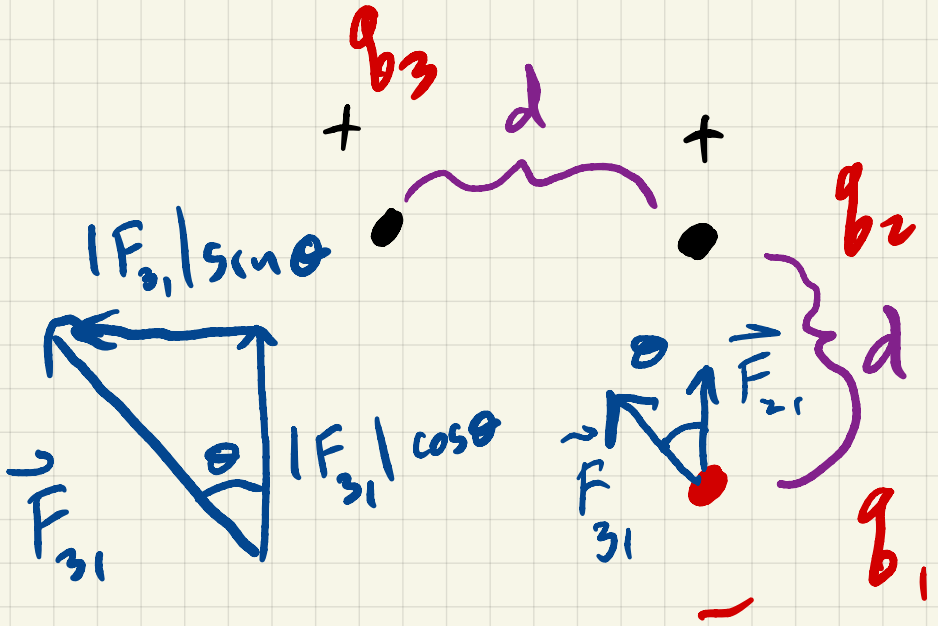
$$\vec{F}_E = \frac{k\,|q_1|\,|q_2|}{r_{12}^2}\,\hat{r}_{12}$$

$$\Rightarrow \vec{E} = \frac{\vec{F}}{q} \Rightarrow \vec{F} = \vec{E}\,q$$





$$qE = mg$$



$$\vec{F}_{21} = |F_{21}|\,\hat{y}$$

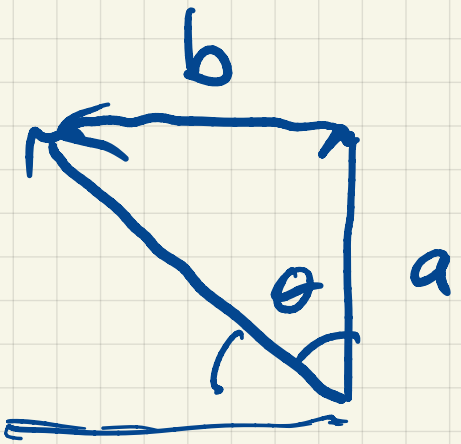
$$\vec{F}_{31} = -|F_{31}|\sin\theta\,\hat{x} + |F_{31}|\cos\theta\,\hat{y}$$

$$|F_{21}| = \frac{K|q_2||q_1|}{d^2}$$

$$\theta_{31} = \tan^{-1}\frac{d}{d} = 45^\circ$$

$$|F_{31}| = \frac{K|q_3||q_1|}{(d^2+d^2)^{1/2}}$$

$$\vec{F}_{1\,net} = \vec{F}_{21} + \vec{F}_{31} = -|F_{31}|\sin\theta\,\hat{x} + \left(|F_{21}| + |F_{31}|\cos\theta\right)\hat{y}$$



$$\tan\theta = \frac{b}{a}$$

$$\theta = \tan^{-1}\left(\frac{b}{a}\right)$$