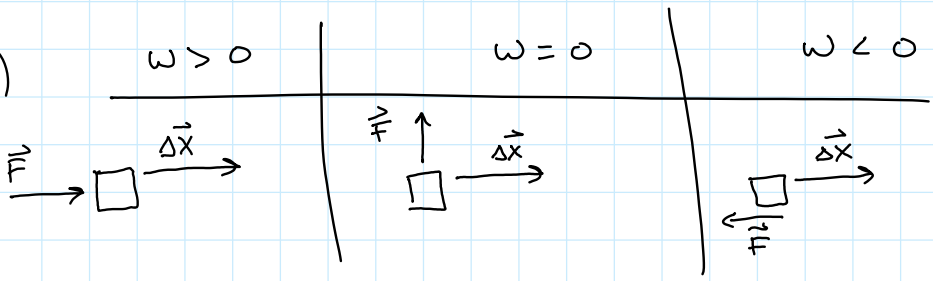
Phy 4B 4/25

Tuesday, April 25, 2017 7:00 PM

Introduce Electric Potential

Worksheet p. 42

A)



$W = \vec{F} \cdot \Delta\vec{x}$ for a constant force

B) 1) Negative
2) Positive
3) Zero
4) equal

$W = \Delta K$

C) 1) Neg.
2) Pos.
3) Neg.
4) less than

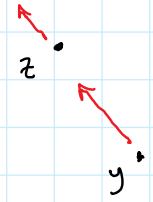
p. 43

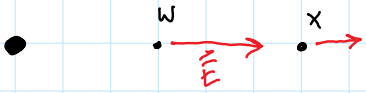
D) Work = ΔKE

Net work done on object

change in KE of object

II A)

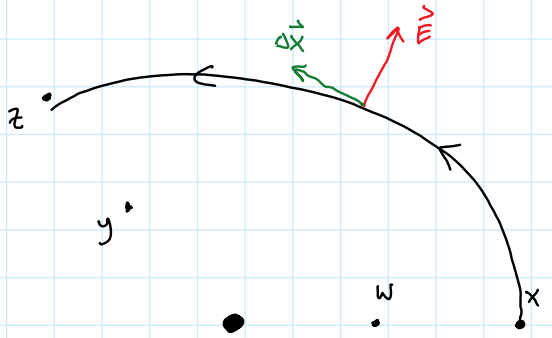




B) $W_{Field} > 0$ $\quad E \propto \frac{1}{r}$

$W_{W \to x} = -W_{x \to W}$

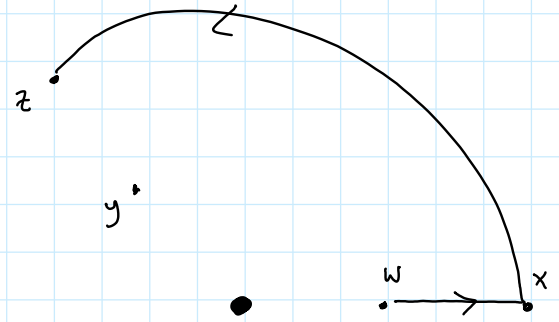
c)



$W_{x \to z} = 0$

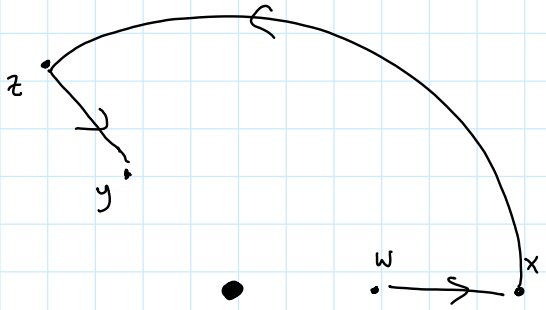
P. 44

2)



$W_{W \to x} = W_{W \to x \to z}$

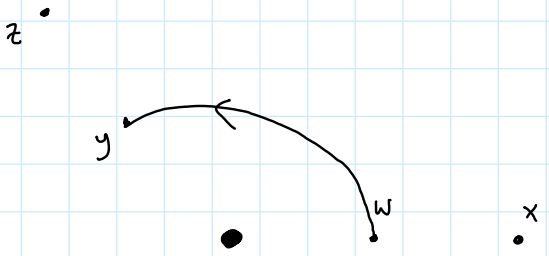
D 1)



$$W_{w \to x} = - W_{z \to y}$$

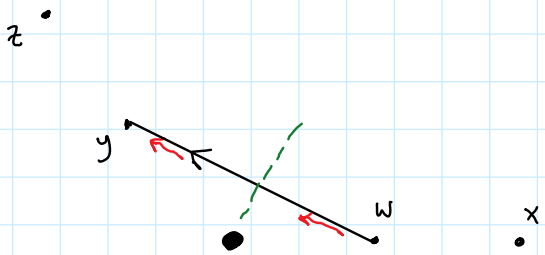
$$W_{w \to x \to y \to z} = 0$$

2)

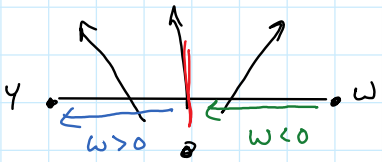


$$W_{w \to y} = 0$$

3)



$$W = 0$$



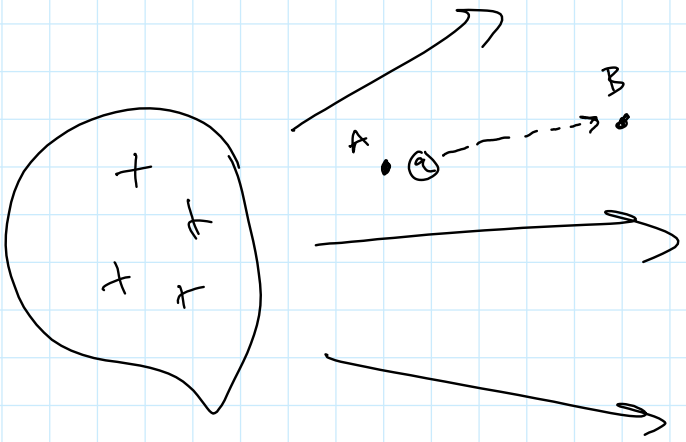
$W_{net} = 0$

Work is same for every path from $w \to y$

p. 45 A) 1) greater

2) same

$$\Delta V_{wx} = -\frac{W_{field}}{q}$$



charge	W_{Field}	$\frac{W}{q} = V$
q_0	W_0	$\frac{W_0}{q_0}$
$2q_0$	$2W_0$	$\frac{W_0}{q_0}$
$3q_0$	$3W_0$	$\frac{W_0}{q_0}$
⋮	⋮	⋮
$10\,q_0$	$10\,W_0$	$\frac{W_0}{q_0}$

3) No

4) No

if $\Delta V = -\frac{W}{q}$

$$W = -q\,\Delta V$$

P. 46

13) 1) positive

2) a) $\Delta K = K_f - K_i$

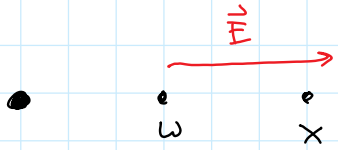
$= \frac{1}{2}mv_f^2 - \frac{1}{2}mv_i^2$ ($v_i = 0$)

$= \frac{1}{2}(3\times10^{-8})(40)^2$

$= 2.4\times10^{-5}$ J

b) $W = \Delta K = 2.4\times10^{-5}$ J

c) $\Delta V = -\frac{W}{q} = -\frac{2.4\times10^{-5}}{2\times10^{-6}} = -12$ V



E always points to lower electric Potential

$$V_x < V_w$$

$$\Delta V_{w \to x} = V_x - V_w < 0$$