Kinematics PS → 2A.3 Level 2 #1

2) $a = ?$

$v_i = 0\ m/s$ $\quad v_f = v_i + at$

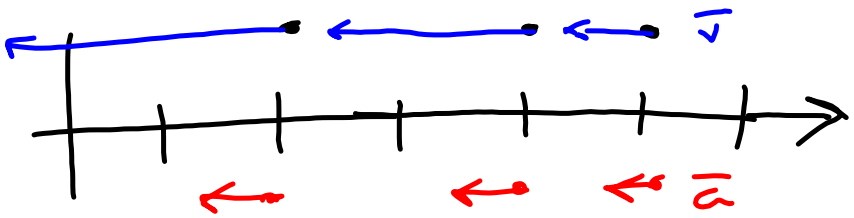
$v_f = 19\ m/s$ $\quad a = \frac{v_f - v_i}{t}$

$t = 8.5\ s$ $\quad = \frac{19\ m/s - 0\ m/s}{8.5}$

$= 2.24\ m/s^2$

$\bar{a} = 2.24\ m/s^2$ west

$= -2.24\ m/s^2$ (assuming east is +)



4) $v_i = 15\ m/s$

$v_f = 0\ m/s$

$t = 2.5\ s$

$a = ?$

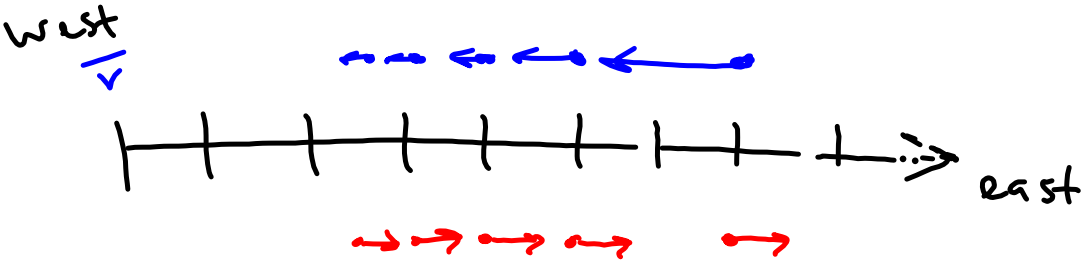
b) $v_f = v_i + at$

$$a = \frac{v_f - v_i}{t}$$

$$= \frac{0\ m/s - 15\ m/s}{2.5\ s}$$

$$= -6\ m/s^2$$

$\bar{a} = -6\ m/s^2$ (assuming East is +)



$\Delta x = ?$

$$\Delta x = \frac{1}{2}(v_f - v_i)t$$

$$= \frac{1}{2}(0\ m/s - 15\ m/s)(2.5\ s)$$

$$= 18.75\ m$$

7) $v_i = 0\ m/s$

$v_f = 33\ m/s$

$a = ?$

$\Delta x = 240\ m$

$$v_f^2 = v_i^2 + 2a\Delta x$$

$$a = \frac{v_f^2 - v_i^2}{2\Delta x}$$

$$= \frac{(33\ m/s)^2 - (0\ m/s)^2}{2(240\ m)}$$

$$= 2.27\ m/s^2$$

Motion Map of ball thrown up