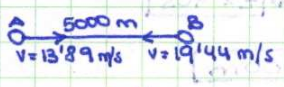
HOJA 1.2. – CINEMÁTICA

① $x = x_0 + v(t - t_0) \rightarrow x = 2 + 2 \cdot (180 - 0) = \boxed{362\ m}$

② $\vec{v} = \frac{\Delta \vec{r}}{\Delta t} \rightarrow \Delta t = \frac{\Delta \vec{r}}{\vec{v}} = \frac{300}{7} = \boxed{42'86\ s}$

③ 

$x = x_0 + vt$

$x_1 = 0 + 13'89t$
$x_2 = 5000 - 19'44t$
$\Big\} \; x_1 = x_2 \rightarrow 13'89t = 5000 - 19'44t \; ; \; 33'33t = 5000 \; ;$
$\boxed{t = 150'02\ s}$

$x_1 = 13'89 \cdot 150'02 = \boxed{2083'71\ m \text{ de A}}$

④ 

$\vec{v} = \frac{\Delta \vec{r}}{\Delta t} = \frac{\vec{r} - \vec{r}_0}{t - t_0} \rightarrow \vec{v} = \frac{80 - 20}{5} = \boxed{12\ m/s}$

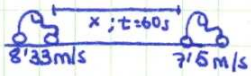
⑤ $\vec{r} = \vec{r}_0 + vt \rightarrow \vec{r} = 0 + 340 \cdot 5 = \boxed{1700\ m}$

⑥ 

$x = x_0 + vt$

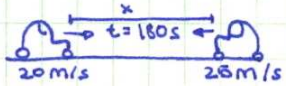
$x_1 = 0 + 25t$
$x_2 = 0 + 27'78(t - 20)$
$\Big\} \; x_1 = x_2 \rightarrow 25t = 27'78t - 833'4 \; ; \; 2'78t = 833'4$
$\boxed{t = 299'78\ s}$

$x_1 = 0 + 25 \cdot 299'78 = \boxed{7494'5\ m}$

⑦ 

$x = x_0 + vt$

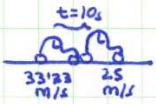
$x_1 = 0 + 8'33 \cdot 60 = 500\ m$
$x_2 = 0 + 7'5 \cdot 60 = 450\ m$
$\Big\} \; x = x_1 - x_2 = 500 - 450 = \boxed{50\ m}$

⑧ 

$x = x_0 + vt$

$x_1 = 0 + 20 \cdot 180 = 3600\ m$
$x_2 = 0 + 25 \cdot 180 = 4500\ m$
$\Big\} \; x = x_2 + x_1 = 4500 + 3600 = \boxed{8100\ m}$

(9)



$x = x_0 + vt$

$x_1 = 0 + 25t$

$x_2 = 0 + 33'33\,(t - 10)$

$\left.\begin{matrix} x_1 = 0 + 25t \\ x_2 = 0 + 33'33\,(t-10) \end{matrix}\right\} x_1 = x_2 \rightarrow$

$25t = 33'33t - 333'3 \rightarrow \boxed{t = 40\,s}$

$x = 0 + 25 \cdot t = 25 \cdot 40 = \boxed{1000\,m}$

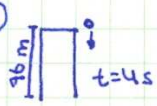
(10) a) $v = v_0 + at \rightarrow t = \frac{v - v_0}{a} = \frac{0 - 10}{-2} = \boxed{5\,s}$

b) $x = x_0 + v_0 t + \frac{1}{2} a t^2 \rightarrow x = 0 + 10 \cdot 5 + \frac{1}{2} \cdot (-2) \cdot 5^2 = \boxed{25\,m}$

c) $v = v_0 + at \rightarrow t = \frac{v - v_0}{a} = \frac{0 - 20}{-2} = \boxed{10\,s}$

$x = x_0 + v_0 t + \frac{1}{2} a t^2 \rightarrow x = 0 + 20 \cdot 10 + \frac{1}{2} \cdot (-2) \cdot 10^2 = \boxed{100\,m}$

(11)



$y = y_0 - \frac{1}{2} g t^2$

$0 = 76 - \frac{1}{2} \cdot g \cdot 4^2 \rightarrow 0 = 76 - 8g \rightarrow 8g = 76 \rightarrow \boxed{g = 9'5\,m/s^2}$