Soluciones Relación 2

1. $\boldsymbol{v} = 2Rsen\left(\frac{t}{2}\right)\boldsymbol{u}_t\,[m/s]$

   $a_t = R\cos\left(\frac{t}{2}\right) \quad a_n = Rsen\left(\frac{t}{2}\right)$

2. $\boldsymbol{a} = -9{,}8\,\boldsymbol{j}\ [m/s^2] \quad \boldsymbol{v} = 3\boldsymbol{i} + (4 - 9{,}8t)\,\boldsymbol{j}\ [m/s] \quad \boldsymbol{r} = (2+3t)\boldsymbol{i} + \left(3 + 4t - 4{,}9t^2\right)\boldsymbol{j} + \boldsymbol{k}\ [m]$

   $y = -0{,}54x^2 + 3{,}51x - 1{,}83\ [m]$

   $a_n = -9{,}8\,[m/s^2]; \quad a_t = 0 \ ; \ R = 0{,}92m$

3. $v = 6\,m/s \quad a_t = \frac{8}{3}\sqrt{2}\ m/s^2 \quad a_n = \frac{4}{3}\ m/s^2 \quad R = 27m$

4. t_1=16,32s; t_1=3,68s d_C=20m ; v_t=4m/s <v>=2m/s

5. v_e=465,3m/s a_e=3,41.10^{-2} m/s^2 ; v_n=356,2m/s a_e=2,6.10^{-2} m/s^2

6. v_T=3070m/s a_n=0,223 m/s^2

7. *ver en clase*

8. $\boldsymbol{v} = (5\sqrt{2} + 25)\,\boldsymbol{i} + (5\sqrt{2} - 9{,}8t)\,\boldsymbol{j} \qquad t = 1{,}57s \quad x = 50{,}4m$ t=1,57s x=50,4m

9. $t < 8s\ v_2 = 0{,}56 + 1{,}4t\ [m/s] \quad ; t \geq 8s\ v = 11{,}68\,m/s$

   $t < 8s\ v_3 = -0{,}83 + 1{,}4t\ [m/s] \quad ; t \geq 8s\ v = 10{,}3\,m/s \ ; \ v_{23} = 1{,}39\,m/s$

10. $\boldsymbol{r}$(t=2)=10$\boldsymbol{i}$+11$\boldsymbol{j}$ $\boldsymbol{v}$(t=2)=5$\boldsymbol{i}$+8$\boldsymbol{j}$