

A.-Cinemática

1. $-\text{ind} : \vec{v} \bullet \vec{r} = 0$

2. $-v_0 = 3g$

3. $-d_{\text{total}} = h_0 \left(\frac{2}{1-f^2} - 1 \right)$

4. $-*$

5. $-x(t) = \frac{k^2 t^4}{144}$

6. $-$

a) $\dot{x} = v_0 e^{-kx}$

b) $x = \frac{v_0}{1+v_0 kt}$

7. $-\dot{x} = -\frac{v_0^2 t}{\sqrt{h^2 + (v_0 t)^2}}$

8. $-\text{ind} : \lim_{x \rightarrow \infty} e^{-x} = 0$

9. $-\text{ind} : a \bullet b = |a||b| \sin \alpha$

10. $-\rho = \frac{v^3}{|\vec{a} \times \vec{b}|}$

11. $-\ddot{y} = -w_0^2 d \sin \theta$

12. $-v(t) = \left(v_0 - v_0 \cos \left(\frac{v_0 t}{R} \right) \right) \hat{i} + v_0 \sin \left(\frac{v_0 t}{R} \right) \hat{j}$

13. $-\vec{r} = \frac{v_0}{\sqrt{1+4c^2 x^2}} \hat{i} + \frac{2cv_0 x}{\sqrt{1+4c^2 x^2}} \hat{j}$

14. $-a)v = \frac{v_0}{\sqrt{1+k^2}} (k\hat{r} + \hat{\theta})$

b) $\theta = \frac{1}{kt}$

15. $-*$

16. $-*$

17. –

$$a_\rho = -R\alpha(1+\alpha t)^{-2}$$

$$a_\theta = -R\alpha(1+\alpha t)^{-2}$$

18. – *

$$19. -v = v_0 \cot \theta_0$$

$$20. -s = v_0 \int_0^{\frac{l}{v_0}} \sqrt{1 + (w_0 t)^2} dt$$

$$21. -\theta = \frac{v_0 h}{L r_0}$$

22. –

$$\dot{r} = -\frac{\pi}{5} \operatorname{sen}\left(\frac{\pi t}{50}\right)$$

$$r' = -\frac{\pi^2}{250} \cos\left(\frac{\pi t}{50}\right)$$

$$23. -\dot{r} = -w^2(R\hat{\rho} + 4d\hat{k})$$

24. – *

25. – *use * pitagoras * y * relaciones * trigonometricas*

$$26. -w = -\frac{v}{2l \operatorname{sen} \theta}$$

$$27. -T = 2\pi \sqrt{\frac{R}{g}}$$

28. –

$$a) \vec{v} = v_0 \cos \alpha \hat{\theta} + v_0 \operatorname{sen} \alpha \hat{z}$$

$$b) \ddot{r} = -\frac{v_0 \cos^2 \alpha}{R} \hat{r}$$

$$c) \rho = \frac{R}{\cos^2 \alpha}$$

29. – *

30. –

$$a) v = \frac{v_0}{\sqrt{1+\theta^2}} \hat{r} + \frac{v_0 \theta}{\sqrt{1+\theta}} \hat{\theta}$$

$$b) \hat{t} = \frac{1}{\sqrt{1+\theta^2}} (\hat{r} + \theta \hat{\theta})$$

$$c) a = \frac{(2+\theta)}{a(1+\theta^2)^2} [\theta(-\hat{r}) + \hat{\theta}]$$

$$31.-b)v_x = v_0 \cos \alpha \sin\left(\frac{qB_0 t}{m}\right); v_y = v_0 \cos \alpha \cos\left(\frac{qB_0 t}{m}\right)$$

$$32.-*$$

$$33.-*$$

$$34.-v_c = \frac{w_0 R}{2}$$

$$35.-\rho(\theta) = \frac{D(\cos \theta)_{v_0}^{v_1-1}}{(1 + \sin \theta)_{v_0}^{v_1}}$$

$$36.-$$

$$a)z(x)=\sqrt{\frac{2v_0x}{k}};\vec{r}(t)=\frac{kv_0t^2}{2}\hat{i}+v_0t\hat{j}$$

$$b)a_n=\frac{kv_0^2}{\sqrt{(kz)^2+v_0^2}};a_t=\frac{k^2v_0z}{\sqrt{(ky)^2+v_0^2}}$$

$$37.-\dot{r}=Rv_0\sqrt{\frac{5}{4}-\cos\left(\frac{\vartheta}{2}\right)}\left(\frac{\sin(\theta)}{\frac{5}{2}-2\cos\left(\frac{\theta}{2}\right)}\hat{\rho}+\hat{\theta}\right)$$

$$38.-*$$

$$39.-$$

$$b)a=\frac{g^2t}{\sqrt{v_0^2+(gt)^2}}\hat{t}+\frac{v_0^2+(gt)^2}{\rho}\hat{n}$$

$$c)\rho=\frac{\left(v_0^2+(gt)^2\right)^{\frac{3}{2}}}{gv_0}$$

$$40.-$$

$$a)r(t)=r_0e^{\sqrt{k^2-w^2}t}$$

$$b)a=r\left[\left(k^2-2w^2\right)\hat{r}+2w\sqrt{k^2-w^2}\hat{\theta}\right]$$

$$c)a_n(t)=r_0kwe^{\sqrt{k^2-w^2}t};a_t(t)=r_0k\sqrt{k^2-w^2}e^{\sqrt{k^2-w^2}t}$$

$$41.-*$$

$$42.-*$$

$$43.-\|\dot{r}\|=\sqrt{(w_0R)^2+c^2}$$