

EXAMEN GRADO SUPERIOR MATEMÁTICAS 2020

1

a)

El movimiento es MRU ya que no tiene aceleración.

$$s(t) = -12 + 5t \rightarrow s(t = 0) = -12 \text{ m}$$

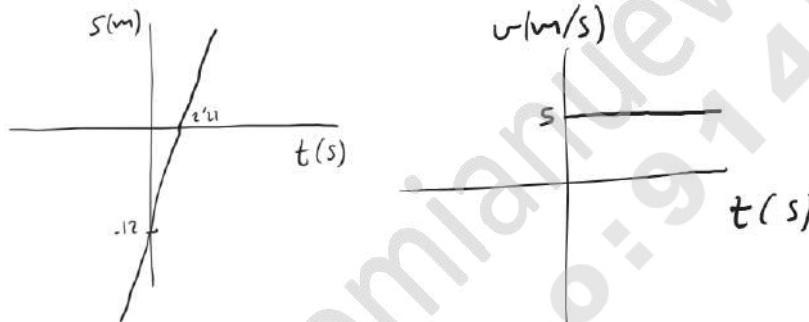
b)

$$v = 5 \text{ m/s}$$

c)

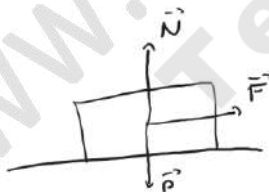
$$0 = -12 + 5t \rightarrow t = \frac{12}{5} = 2,4 \text{ s}$$

d)



2

a)



b)

$$a = \frac{F}{m} = \frac{2000}{500} = 4 \frac{\text{m}}{\text{s}^2}$$

c)

$$v = v_0 + at = 4 \cdot 20 = 80 \text{ m/s}$$

3

a)

$$P = mg = 10 \cdot 9,8 = 98$$

b)

$$E_p = mgh = 10 \cdot 9,8 \cdot 10 = 980 \text{ J}$$

c)

$$E_c = \frac{1}{2}mv^2 = \frac{1}{2}10 \cdot 2^2 = 20 \text{ J}$$

d)

$$W = F\Delta x = P\Delta h = 98 \cdot 10 = 980 \text{ J}$$

4

a)

$$\frac{1}{R_{eq}} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \frac{1}{R_4} = \frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \frac{1}{6} = \frac{6+4+3+2}{12} = \frac{15}{12} \rightarrow R_{eq} = \frac{12}{15} = 0,8 \Omega$$

b)

$$I = \frac{V}{R_{eq}} = \frac{9}{\frac{12}{15}} = \frac{45}{4} = 11,25 \text{ A}$$

c)

$$I_i = \frac{V}{R_i}$$

$$I_1 = \frac{9}{2} \text{ A}; I_2 = \frac{9}{3} = 3 \text{ A}; I_3 = \frac{9}{4} \text{ A}; I_4 = \frac{9}{6} \text{ A}$$

d)

$$P = V \cdot I = 9 \cdot 11,25 \text{ W}$$

5

a)



$$v = \frac{\lambda}{T} \rightarrow T = \frac{\lambda}{v} = \frac{15}{250} = \frac{3}{50} \text{ s}$$

b)

$$f = \frac{1}{T} = \frac{50}{3} \text{ Hz}$$

c)

$$y = 3 \text{ sen } 2\pi \left( \frac{t \cdot 50}{3} + \frac{x}{15} \right) \text{ m}$$

www.academianuevofuturo.com  
Teléfono: 914744569