Esteban
Díaz

PAUTA
AUX "7"

P1

a) ¿AREA?

Siguiendo la NOTA C/T a la TRANSFOL de Fourier

$$\Rightarrow M_0 = S(\omega) = \int_{-\infty}^{\infty} s(\tau)\, e^{i\omega\tau}\, d\tau$$

$$M_0 = \int_{-\infty}^{\infty} A \cdot \delta(\tau) \cdot e^{i\omega\tau}\, d\tau$$

Por propiedad del delta de Dirac

$$\int_{-\infty}^{\infty} \delta(\tau-a)\, F(\tau)\, d\tau = F(a)$$

$$\Rightarrow M_0 = A \cdot \underbrace{e^{i\omega \cdot 0}}_{1} =$$

$$M_0 = A = 6 \cdot 10^{10} [N \cdot m]$$

Recordando que:

$M_0 = \text{Area}_{\text{de Ruptura}} \cdot \bar{u} \cdot \mu$

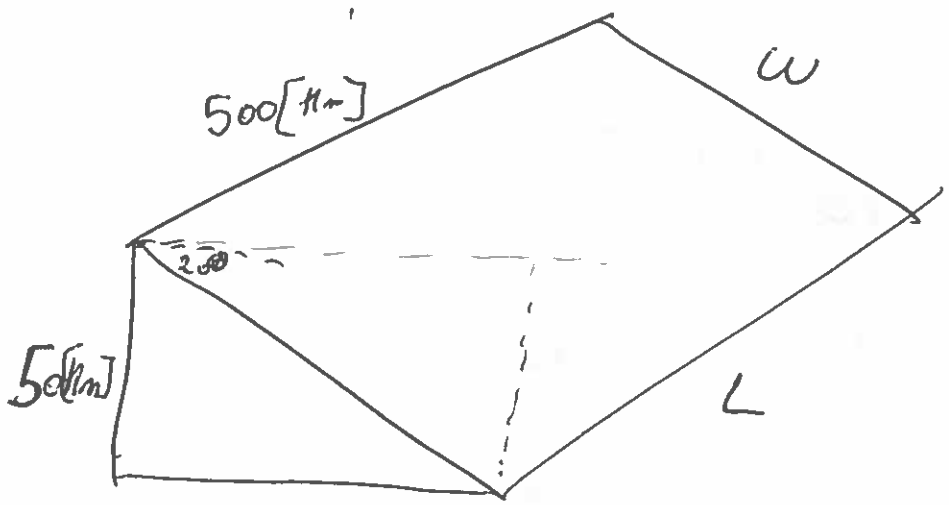
$6 \cdot 10^{10}\ [N \cdot m] = \text{Area} \cdot 0{,}01\ [m] \cdot 3 \cdot 10^{10}\ \left[\frac{N}{m^2}\right]$

$\text{Area} = 200\ [m]$

$$M_w(M_0 = 6 \cdot 10^{10}) = \frac{2}{3}\left(\log_{10}(6 \cdot 10^{10}) - 9{,}1\right)$$

$M_w = 1{,}11$ //

P3]



Por Trigonometria

$$Sin(20°) = \frac{50}{w}$$

$$w = \frac{50}{Sin(20)} = 146,19 \ [Km]$$

a) $\bar{u} = L \cdot 10^{-4} = 500 \cdot 10^{-4} = 5 \cdot 10^{-2}$ [Km]

$= 5 \cdot 10^{-2} \cdot 10^{3}$ [m]

$= 50$ m

$M_0 = W \cdot L \cdot \bar{u} \cdot \mu$

$= 146.190 \cdot 500.000 \cdot 50 \cdot 3 \cdot 10^{10}$ / Todo en metros

$= 1.0964 \cdot 10^{24}$ [N·m]

Eq a

$$Mw = \frac{2}{3}(\log_{10}(M_0) - 9,1) = 9,96 \ Mw \ //$$

) $\log(E_s) M_w = 9,96) = 1,5 M_w + C$

$$E_s = 10^{1,5 M_w + C}$$

- $E_s(M_w = 9,96) = 10^{1,5 \cdot 9,96} \cdot 10^{C}$
- $E_s(M_w = 5) = 10^{1,5 \cdot 5} \cdot 10^{C}$

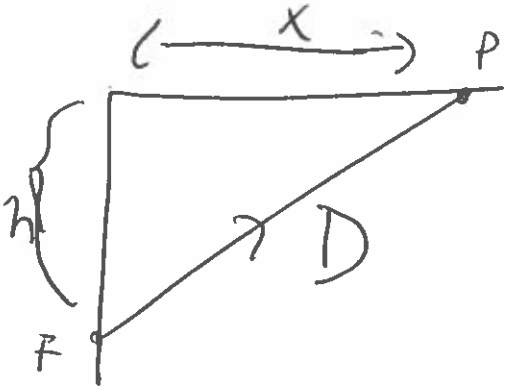
La razón de ambas energías se saca para ver la cantidad de eventos necesarios para liberar la cantidad de energía

) $$\frac{E_s(M_w = 9,96)}{E_s(M_w = 5)} = \frac{10^{1,5 \cdot 9,96} \cdot 10^{C}}{10^{1,5 \cdot 5} \cdot 10^{C}}$$

$$= 2,7542 \cdot 10^{7} \text{ sismos}$$

P4]

a)



$T_S - T_P = 5{,}5$ [s]

$\Rightarrow \frac{D}{V_S} - \frac{D}{V_P} = 5{,}5$ / con $\cdot V_P = \sqrt{3} \cdot V_S$

$\cdot V_P = 5$ Km/s

$V_S = \frac{5}{\sqrt{3}} = 2{,}88 \frac{Km}{s}$

$\frac{D}{2{,}88} - \frac{D}{5} = 5{,}5$

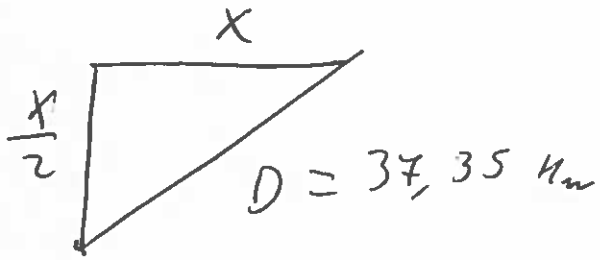
$D\left(\frac{1}{2{,}88} - \frac{1}{5}\right) = 5{,}5$

$D \cdot 0{,}1472 = 5{,}5$

$D = 37{,}35$ [Km]

//

DISTANCIA EPICENTRAL d x?



$$\left(\frac{x}{2}\right)^2 + x^2 = 37,35^2$$

$$\frac{x^2}{4} + x^2 = 37,35^2$$

$$x^2 \cdot \frac{5}{4} = 37,35^2$$

$$x = 33,41 \text{ Km}$$