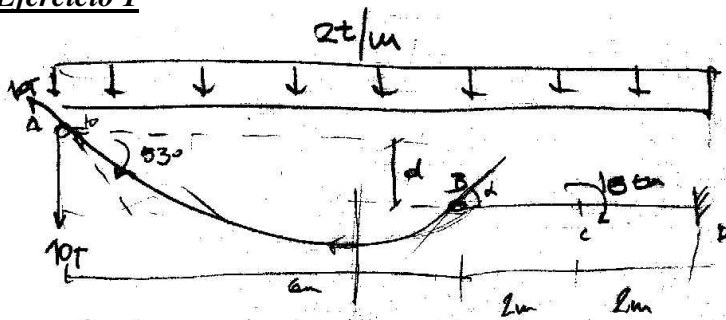


**SOLUCIÓN PRIMER PARCIAL 03/10/05**

**Ejercicio 1**

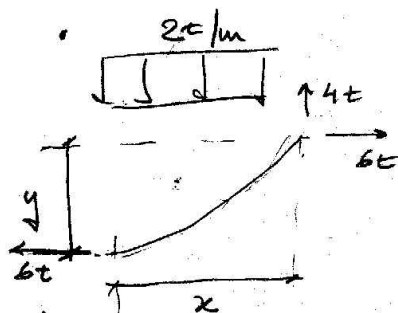


$$\sum M_B^i = 6 \cdot 10 \sin 53 - 10 \cdot d \cos 53 - 2 \cdot 6 \cdot 3 = 0$$

$$d = \frac{48 - 36}{10 \cdot 0,6} = 2 \text{ m} \Rightarrow \boxed{d = 2 \text{ m}}$$

$$\sum F_V = 10 \sin 53 + V_B - 2 \cdot 6 = 0 \Rightarrow \boxed{V_B = 4t} \quad \boxed{F_B = 7,21t}$$

$$H_B = 10 \cos 53 \Rightarrow \boxed{H_B = 6t} \quad \boxed{\alpha = 33,7^\circ}$$



$$4 = 2 \cdot x \Rightarrow \boxed{x = 2 \text{ m}}$$

$$\sum M_B^i = 6y - 2 \cdot 2 \cdot 1 = 0$$

$$\boxed{y = 2/3 = 0,67 \text{ m}}$$

Verificación con la ecuación del cable:

$$z(x) = \frac{2}{2 \cdot 6} x^2 + Ax + B = \frac{x^2}{6} + Ax + B$$

$$z(0) = 0 \Rightarrow B = 0$$

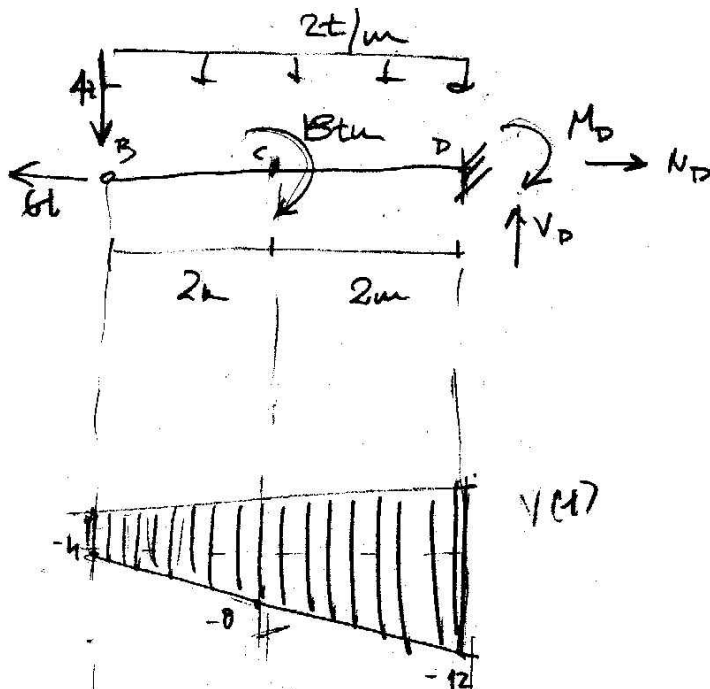
$$z(x=6) = \frac{36}{6} + A \cdot 6 = -4$$

$$6A = -8 \rightarrow A = -8/6$$

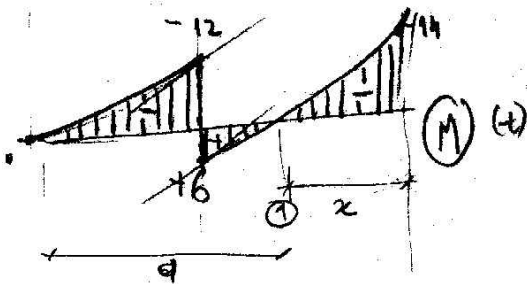
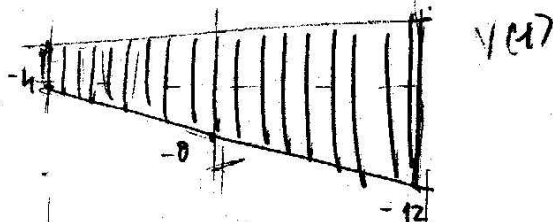
$$z(x) = \frac{x^2}{6} - \frac{8}{6}x$$

$$z'(x) = \frac{1}{6}(2x - 8) = \frac{2x}{6} - \frac{8}{6} = 0 \Rightarrow \boxed{x = 4 \text{ m}}$$

$$z(x=4) = \frac{16}{6} - \frac{32}{6} = -\frac{16}{6} = -\frac{8}{3} \checkmark$$



$$\begin{cases} N_D = 6t \\ V_D = 12t \\ M_D = 14tm \end{cases}$$



$$M_c^{int} = -4 \cdot 2 - 2 \cdot 2 \cdot 1 = -12tm$$

$$M_c^{der} = -12 + 18 = 6$$

$$M_{\text{max}} = -14 + 18x - \frac{2x^2}{2} = 0$$

$$x^2 - 12x + 14 = 0$$

$$x = \frac{12 \pm \sqrt{144 - 56}}{2} = \frac{12 \pm 9,38}{2}$$

$$d = 2,69m$$

10,69  
1,31