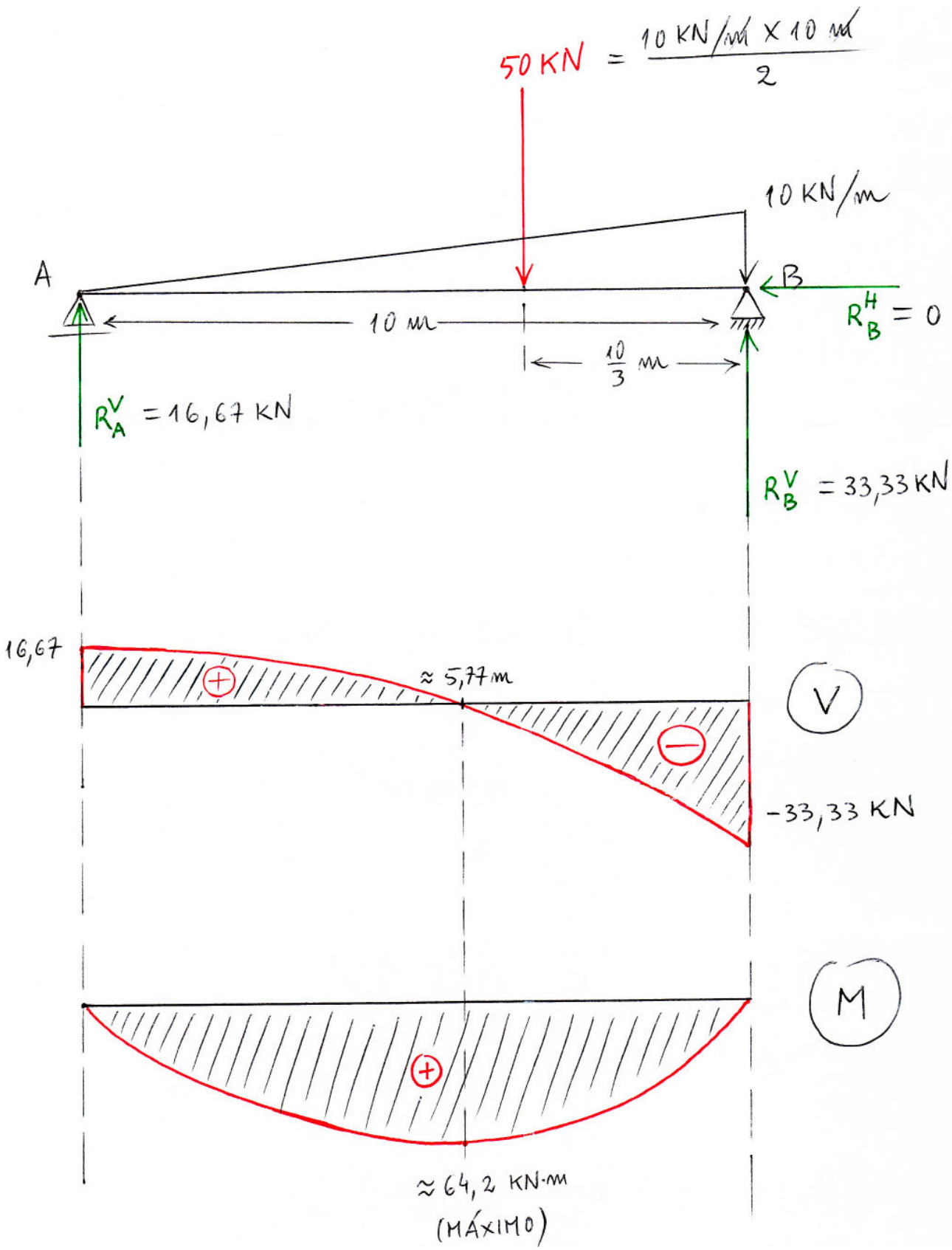
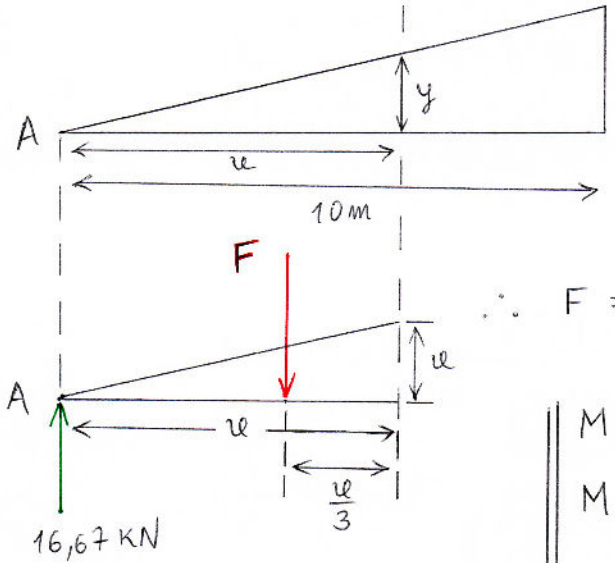

50 KN = 10 KN/m x 10 m / 2
10 KN/m
A
B
10 m
10/3 m
$R_B^H = 0$
$R_A^V = 16,67$ KN
$R_B^V = 33,33$ KN
16,67
≈ 5,77 m
V
-33,33 KN
M
≈ 64,2 KN·m
(MÁXIMO)

CÁLCULO DAS REACÇÕES

$$\begin{cases} \sum F_u = 0 \\ \sum F_y = 0 \\ \sum M_A = 0 \end{cases} \quad \begin{cases} R_A^V + R_B^V - 50 = 0 \\ R_B^H = 0 \\ R_B^V \cdot 10 - 50 \times \frac{2}{3} \times 10 = 0 \end{cases} \quad \begin{cases} R_A^V \cong 16{,}67 \text{ kN} \\ R_B^H = 0 \\ R_B^V \cong 33{,}33 \text{ kN} \end{cases}$$

CÁLCULO DO DIAGRAMA DOS ESFORÇOS CORTANTES E DOS MOMENTOS FLECTORES



$\therefore \frac{y}{u} = \frac{10}{10} \iff y = u \text{ KN/m}$

$\therefore F = \frac{u \cdot u}{2} = \frac{u^2}{2}$

CORTANTES

$V(A) = 16{,}67 \text{ KN}$

$V(u) = 16{,}67 - F = 16{,}67 - \frac{u^2}{2}, \quad 0 \leq u < 10$

$V(B^-) = 16{,}67 - \frac{10^2}{2} = -33{,}33 \text{ KN}$

$V(B) = V(B^-) + R_B^V = 0$

$V(u) = 0 \iff 16{,}67 - \frac{u^2}{2} = 0 \iff$

$\iff u = \sqrt{33{,}34} \cong 5{,}77 \text{ m}$

MOMENTOS

$M(A) = 0$

$M(u) = 16{,}67 \times u - F \cdot \frac{u}{3} = 16{,}67 \cdot u - \frac{u^2}{2} \cdot \frac{u}{3} = 16{,}67u - \frac{u^3}{6}, \quad 0 \leq u < 10$

$M(B) = 16{,}67 \times 10 - \frac{10^3}{6} = 0$

$M_{MÁX} = M(5{,}77) = 16{,}67 \times 5{,}77 - \frac{5{,}77^3}{6} \cong 64{,}2 \text{ KN} \cdot \text{m}$

Paulo Ribeiro