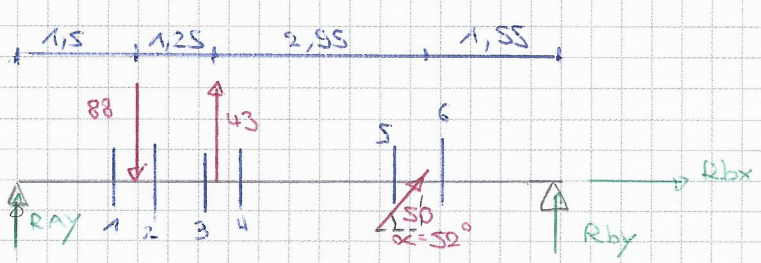
Exercice 14



a) décomposition force : $F_{3x} = \cos(52) \cdot F_3 = 30,8$ RN
$F_{3y} = \sin(52) \cdot F_3 = 39,4$ RN

b) Réaction d'appui

$\Sigma Fx = 0 = 30,8 + Rbx = 0 \Rightarrow Rbx = -30,8$ RN

$\Sigma Fy = 0 = RAY - 88 + 43 + 39,4 + Rby = 0$

$= RAY + Rby = 5,6$ RN

$\Sigma M_A = (-1,5 \cdot 88) + 2,45 \cdot 43 + 5,7 \cdot 39,4 + 7,25\, Rby = 0$

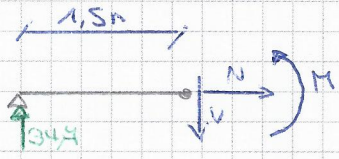
$\Rightarrow Rby = -23,1$ RN

$\Rightarrow RAY = 34,7$ RN

c) détermination des coupes nécessaires

d) calcul des coupes

coupe 1 :

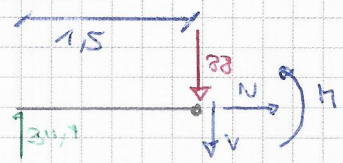


$\Sigma Fx = 0 = N$

$\Sigma Fy = -34,7 + V = 0 \Rightarrow V = 34,7$

$\Sigma M = -34,7 \cdot 1,5 + M = 0 \Rightarrow M = 52,05$ RNm

coupe 2 :

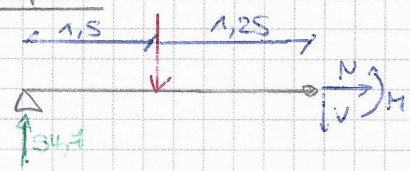


$\Sigma Fx = 0 = N$

$\Sigma Fy = -34,7 + V + 88 = 0 \Rightarrow V = -53,3$ RN

$\Sigma M = 52,05$ RNm

coupe 3 :



$\Sigma Fx = 0 = N$

$\Sigma Fy = -34,7 + 88 + V \Rightarrow V = -53,3$ RN

$\Sigma M = (-2,7 \cdot 34,7) + 1,25 \cdot 88 + M = 0 \Rightarrow M = -16,3$ RNm

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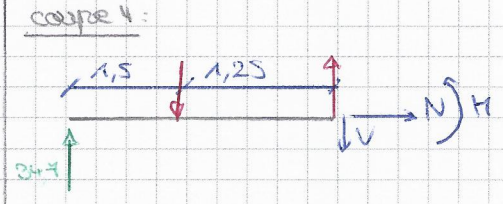
coupe 4 :

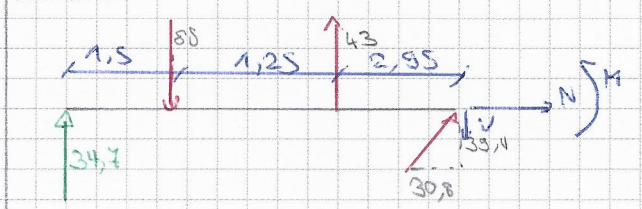


$\Sigma N = 0$

$\Sigma Fy = -34,7 + 88 - 43 + V = 0 \Rightarrow V = -10,3$ RN

$\Sigma M = -163$ RNm

coupe 6 :

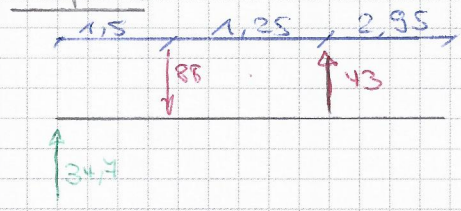


$\Sigma Fx = N + 30,8 = 0 \Rightarrow N = -30,8$ RN

$\Sigma Fy = -34,7 + 88 - 43 - 39,4 + V = 0 \Rightarrow V = 29,1$ RN $\Rightarrow$ valeur opposée à la réaction d'appui

$\Sigma My = (-5,4 \cdot 34,4) + (88 \cdot 4,2) + (-43 \cdot 2,95) + M = 0 \Rightarrow M = -44,96$ RNm

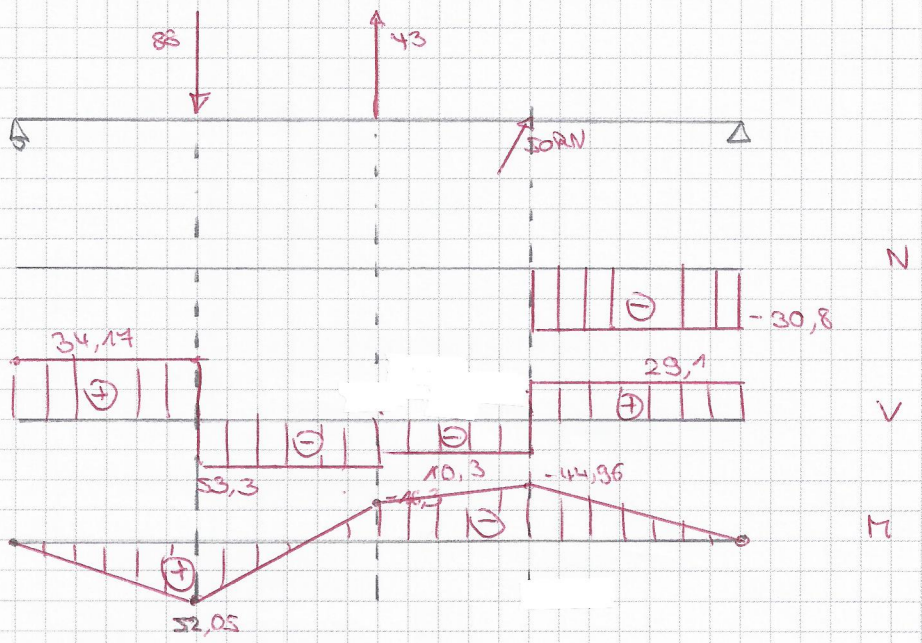
coupe 5 :



$\Sigma Fx = 0 \Rightarrow N = -30,8$ RN

$\Sigma Fy = -34,7 + 88 - 43 + V = 0 \Rightarrow V = -10,3$ RN

$\Sigma My = -44,96$ RNm



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