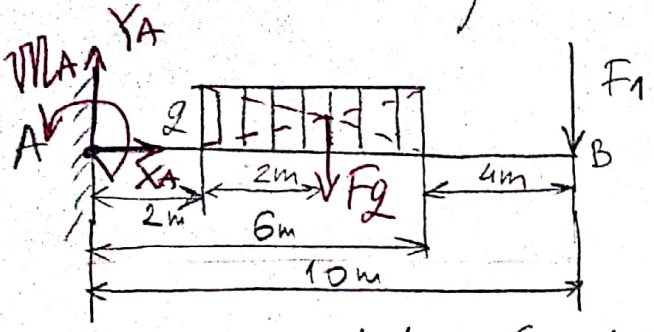
⊛ Konzola (kontinualno i koncentrisano opterećenje)

Zadatak Za datu konzolu, opterećenu datim teretima, analitičkim putem odrediti otpore oslonaca (reakcije veza).



⊛ Podsetiti šta je konzola (terasa, vijak u zidu, ...)

- Objasni zadatak (oslonac, opterećenja na primeru daske (koja može biti polica))

$q = 5\frac{N}{m}$ M_A - moment uklještenja

$F_1 = 15N$ nepoznata !!!

① $\Sigma X_i = 0$ $X_A = 0$

② $\Sigma Y_i = 0$ $Y_A - F_q - F_1 = 0$

$F_q = 5 \cdot 4$

$\boxed{F_q = 20N}$

$\boxed{Y_A = 35N}$

③ $\Sigma M_A = 0$ $-F_1 \cdot 10 - F_q \cdot 4 + M_A = 0$

$\boxed{M_A = 230Nm}$

$F_A = \sqrt{X_A^2 + Y_A^2} \Rightarrow \boxed{F_A = 35N}$

proveka:

$\Sigma M_B = 0$

$M_A - Y_A \cdot 10 + F_q \cdot 6 = 0$

$\boxed{0 = 0}$ ✓

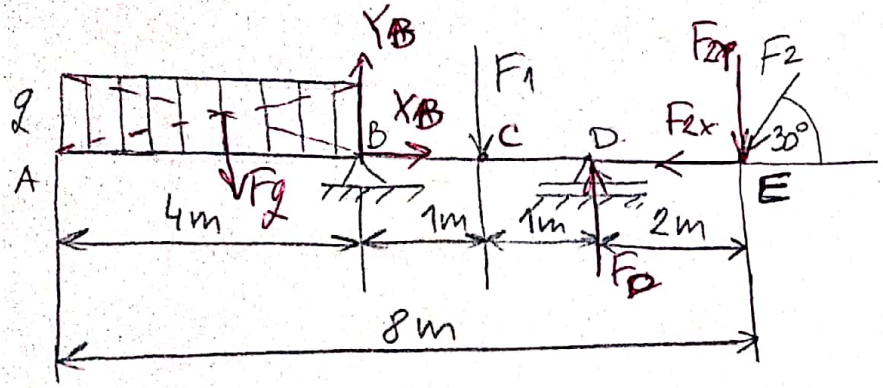
⊛ Greda sa prepustima (kontinualno i koncentrisana opterećenja)

Zadatak Za datu gredu sa prepustima, opterećenu datim teretima, analitičkim putem odrediti otpore oslonaca.

$F_1 = 10N$

$F_2 = 5N$

$q = 1N/m$



$F_q = q \cdot 4$

$F_q = 4N$

① $\Sigma X_i = 0 \quad X_B - F_{2x} = 0$

$X_B = 4{,}33N$

$F_{2x} = F_2 \cos 30° = 5 \cdot \frac{\sqrt{3}}{2}$

$F_{2x} = \frac{5\sqrt{3}}{2} = 4{,}33N$

② $\Sigma Y_i = 0 \quad -F_q + Y_B - F_1 + F_D - F_{2y} = 0$

$-4 + Y_B - 10 + F_D - 2{,}5 = 0$

$Y_B + F_D = 16{,}5$

$F_{2y} = F_2 \sin 30° = 5 \cdot \frac{1}{2}$

$F_{2y} = 2{,}5N$

③ $\Sigma M_B = 0 \quad F_q \cdot 2 - F_1 \cdot 1 + F_D \cdot 2 - F_{2y} \cdot 4 = 0$

$4 \cdot 2 - 10 \cdot 1 + 2F_D - 2{,}5 \cdot 4 = 0$

$2F_D = 12 \Rightarrow \boxed{F_D = 6N}$

$\boxed{Y_B = 10{,}5N}$

$F_B = \sqrt{X_B^2 + Y_B^2} \Rightarrow \boxed{F_B = 11{,}36N}$

Provera:

$\Sigma M_C = 0$

$F_q \cdot 3 - Y_B \cdot 1 + F_D \cdot 1 - F_{2y} \cdot 3 = 0$

$\boxed{0 = 0}$ ✓