B1T4VIGAGERBER

$Lab := 6\ m$

$Lbc := 11\ m$

$Lcd := 4\ m$

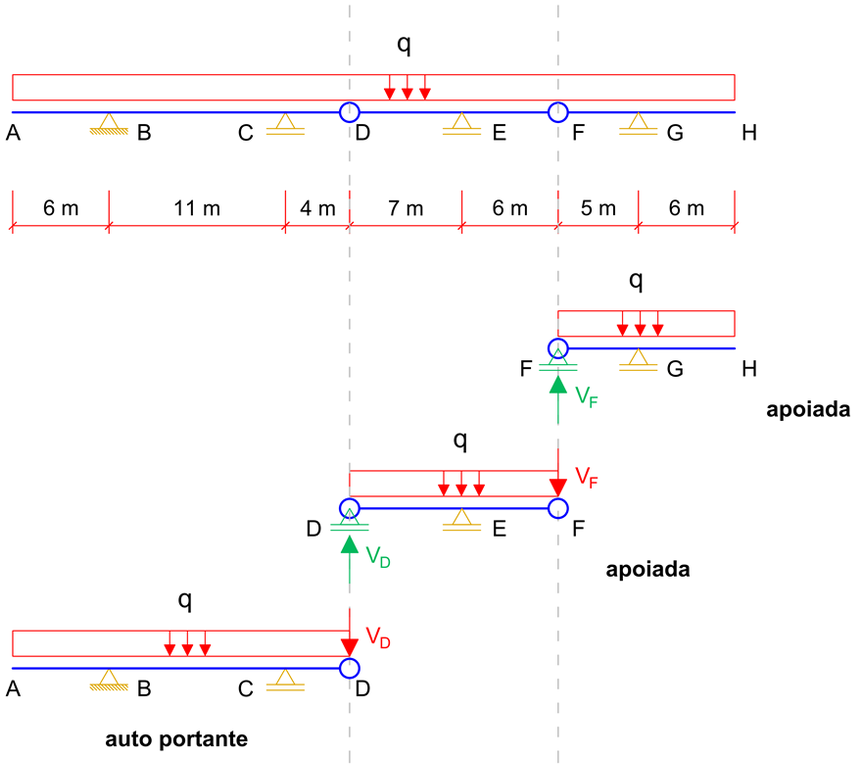
$Lde := 7\ m$

$Lef := 6\ m$

$Lfg := 5\ m$

$Lgh := 6\ m$

$q := 50\ kN/m$



Questões:

Q01) Qual o valor da reação de apoio vertical VB [em kN e com positivo para cima]?
Q02) Qual o valor da reação de apoio vertical VC [em kN e com positivo para cima]?
Q03) Qual o valor da reação de apoio vertical VE [em kN e com positivo para cima]?
Q04) Qual o valor da reação de apoio vertical VG [em kN e com positivo para cima]?
Q05) Qual o valor do momento fletor no ponto E [em kNm e conforme a convenção diagramas]?
Q06) Qual o valor do momento fletor no ponto C [em kNm e conforme a convenção diagramas]

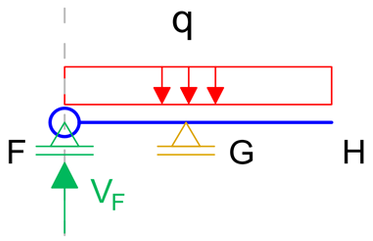
Trecho FGH:

ΣMG = 0 (+) horário

Vf.Lfg - q.Lfg^2/2 + q.Lgh^2/2 = 0

$$Vf := \frac{1}{Lfg} \cdot \left(\frac{q \cdot Lfg^{2}}{2} - \frac{q \cdot Lgh^{2}}{2} \right)$$

$Vf = -55$



ΣFv = 0 (+) para cima

Vf + Vg - q.(Lfg+Lgh) = 0

$$Vg := -Vf + q \cdot (Lfg + Lgh)$$

$Vg = 605$

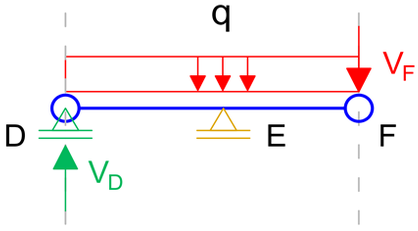
Trecho DEF:

ΣMD = 0 (+) antihorário

Ve.Lde - Vf.(Lde+Lef) - q.(Lde+Lef)^2/2 = 0

$$Ve := \frac{1}{Lde} \cdot \left(Vf \cdot (Lde + Lef) + \frac{q \cdot (Lde + Lef)^{2}}{2} \right)$$

$Ve = 501,4286$



ΣFv = 0 (+) para cima

Vd + Ve - q.(Lde+Lef) - Vf = 0

$$Vd := -Ve + q \cdot (Lde + Lef) + Vf$$

$Vd = 93,5714$

Trecho ABCD:

ΣMB = 0 (+) antihorário

Vc.Lbc - Vd.(Lbc+Lcd) + q.Lab^2/2 - q.(Lbc+Lcd)^2/2 = 0

$$Vc := \frac{1}{Lbc} \cdot \left(Vd \cdot (Lbc + Lcd) - q \cdot \left(\frac{Lab^2}{2} - \frac{(Lbc + Lcd)^2}{2} \right) \right)$$

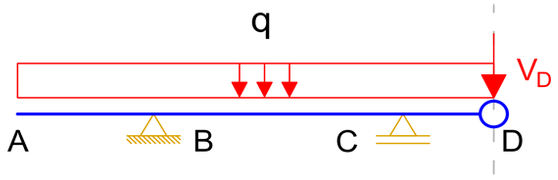
$Vc = 557,1429$

ΣFv = 0 (+) para cima

Vb + Vc - q.(Lab+Lbc+Lcd)- Vd = 0

$$Vb := -Vc + q \cdot (Lab + Lbc + Lcd) + Vd$$

$Vb = 586,4286$



Verificação o Somatório de Forças Verticais Totais:

$$Vtotal := Vb + Vc + Ve + Vg = 2250$$

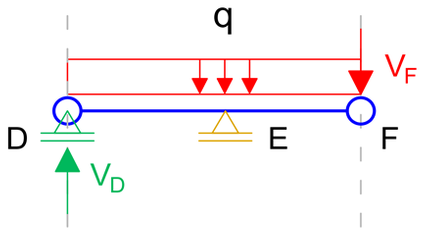
$$qL := q \cdot (Lab + Lbc + Lcd + Lde + Lef + Lfg + Lgh) = 2250$$

OK!!!

Momento Fletor no Ponto E:

$$Me := -Vf \cdot Lef - \frac{q \cdot Lef^2}{2}$$

$Me = -570$



Momento Fletor no Ponto C:

$$Mc := -Vd \cdot Lcd - \frac{q \cdot Lcd^2}{2}$$

$Mc = -774,2857$

