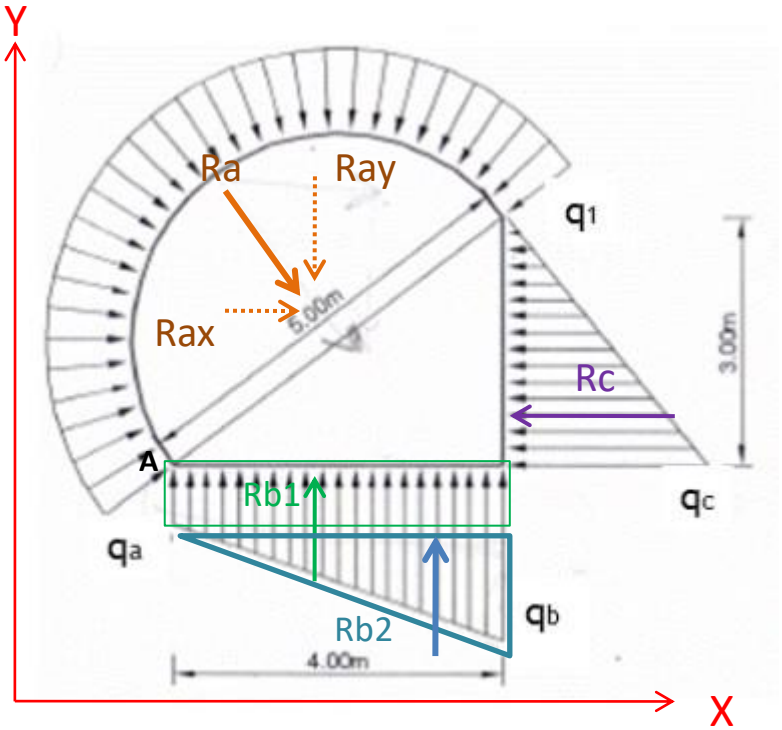
Hallar los valores de qa, qb y qc para que la chapa de la figura se encuentre en equilibrio.

Datos: q1=15 kN/m.



Cálculos:

Ecuaciones de equilibrio

$\sum Fx=0$; $-Rc + Rax = 0$

$\sum Fy=0$; $Rb1 + Rb2 - Ray = 0$

$\sum Ma=0$; $-Ra.(2,5m)+Rc.(1m)+Rb2.(8/3\ m)+Rb1.(2m)$

Sabiendo que:

- $Ra = q1.D = (15KN) . (5m) = 75KN$
- $Ray = q1. D. \cos \alpha = (15KN/m) . (5m). (4/5) = 60KN$
- $Rax = q1. D. \operatorname{Sen} \alpha = (15KN/m) . (5m). (3/5) = 45\ KN$
- $Rc = qc. (3m). (1/2)$
- $Rb2 = (qb-qa). (4m).(1/2) = (qb-qa)\ (2m)$
- $Rb1 = qa. (4m)$

Entonces:

$\sum Fx=0$; $- (qc. (3/2\ m)) + (45KN) = 0$

$\sum Fy=0$; $(qa.4m) + ((qb-qa).2m) - (60KN) = 0$

$\sum Ma=0$; $- (75KN).(2,5m) + (qc.(3/2\ m)).(1m) + ((qb-qa).\ 2m)\ .(8/3\ m) +(qa.4m).(2m) = 0$

Respuesta:

qc= 30KN/m , qa= 6,563KN/M , qb = 23,438 KN/m