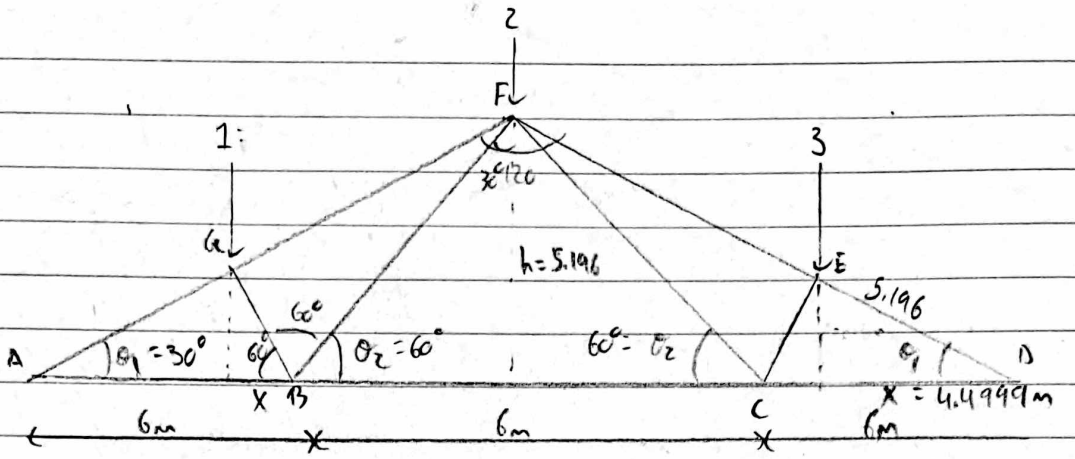
Solutions: 21-S-6.4-MK-02



$\tan 30 = \frac{h}{9m} \rightarrow h = (9m)(\tan 30) = 5.196\ m$

$\theta_2 = \tan^{-1}\left(\frac{5.196°}{3}\right) = 60°$

$\cos 30° = \frac{ED}{6m} \rightarrow ED = (6m)(\cos 30°) = 5.196\ m$

horizontal distance of $DE = \cos 30\left(\frac{x}{5.196m}\right) \rightarrow x = 4.4998$

$\Sigma M_D = 0 = (3kN)(4.4999m) + (2kN)(9m) + (1kN)(18-4.4999m) - A_y(18)$

$A_y = \frac{(3kN)(4.4999m) + (2kN)(9m) + (1kN)(18-4.4999m)}{18}$

$A_y = 2.4999\ kN$

$\Sigma M_A = c = D_y(18m) - (1kN)(4.4999m) - (2kN)(9m) - (3kN)(18m)$

$D_y = \frac{(1kN)(4.4999kN) + (2kN)(9m) + (3kN)(18m - 4.4999m)}{18}$

$D_y = 3.5\ kN$