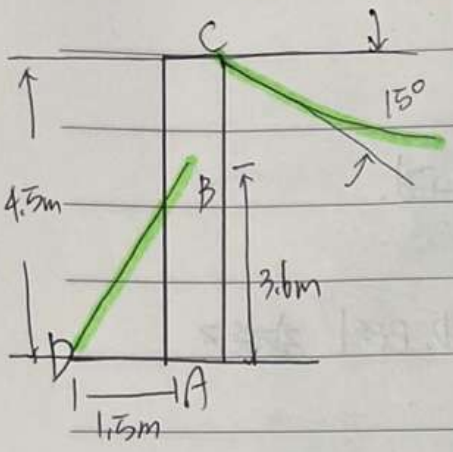
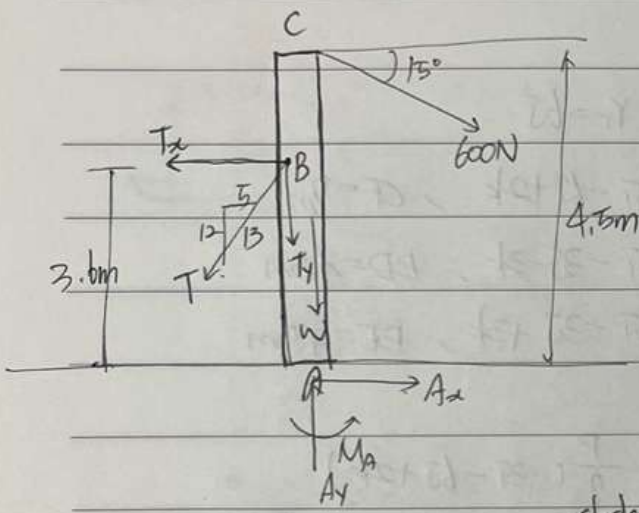
<예제 4.45>



기둥에 균일, 600N 강력의 케이블 C

A에 작용하는 힘이 500N·m를 넘지 않을 때.

케이블 BD 장력의 최대, 최소는?



BD의 길이 $= \sqrt{(1.5)^2+(3.6)^2} = 3.90m$

$W = mg = (175kg)(9.8 m/s^2) = 1716.75N$

clockwise

$+\circlearrowleft \Sigma M_A = 0$:

$-500N\cdot m - [(600N)\cos 15°](4.5m) + \left[\left(\frac{1.5}{3.90}\right)T_{max}\right](3.6m) = 0$

$T_{max} = 2244.7N$

counter clockwise

$+\circlearrowleft \Sigma M_A = 0$:

$500N\cdot m - [(600N)\cdot\cos 15°](4.5m) + \left[\left(\frac{1.5}{3.90}\right)T_{min}\right](3.6m) = 0$

$T_{min} = 1522.44N$.