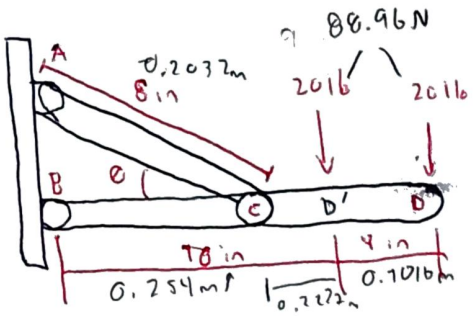
6.77



a) $\theta = 30°$

$F_{AC_x} = F_{AC} \cdot \cos(30°) = 0.1542\ F_{AC}$

$F_{AC_Y} = F_{AC} \cdot \sin(30°) = -0.988\ F_{AC}$

$\cos(\theta) = \frac{BC}{AC}$

$BC = \cos(\theta) \cdot AC = \cos(30) \cdot 8\text{in} = 1.23\text{ in} = 0.0312\text{ m}$

$CD' = 10 - BC = 8.77\text{ in} = 0.2227\text{ m}$

$CD = 0.1016 + 0.2227 = 0.3243\text{ m}$

$\sum M_c = 0$

$-(F_{AC_Y} \cdot 0.2032) + (88.96 \cdot 0.2227) + (88.96 \cdot 0.3243) = 0$

$-(-0.988\ F_{AC} \cdot 0.2032) + 18.9217 + 28.8497 = 0$

$0.2\ F_{AC} = -47.7714$

$F_{AC} = \frac{47.7714}{0.2} = \boxed{238.85\text{ N}}$