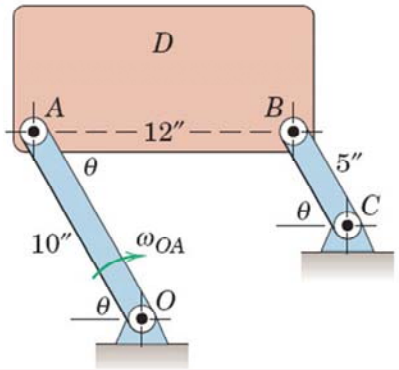
Solution of Relative-Acceleration Eq.: Exercise

Calculate the ***angular acceleration*** of the plate, where ***AO*** has a constant ***angular velocity*** ω_{OA} = 4 rad/s and θ = 60° for both links.



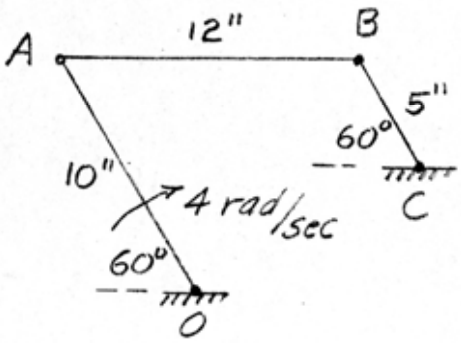
5/134 $v_A = r\omega = 10(4) = 40$ in./sec $= v_B$

$\underline{a}_B = \underline{a}_A + (\underline{a}_{B/A})_n + (\underline{a}_{B/A})_t$

$\omega_{AB} = 0$ so $(a_{B/A})_n = 0$

$a_A = 10(4^2) = 160$ in/sec^2

$(a_B)_n = v_B^2/\bar{BC} = \bar{40}^2/5 = 320$ in./sec^2



$(a_{B/A})_t = \dfrac{160}{\cos 30°} = 185$ in./sec^2

$\alpha_{AB} = \dfrac{185}{12} = 15.40$ rad/sec^2 CW