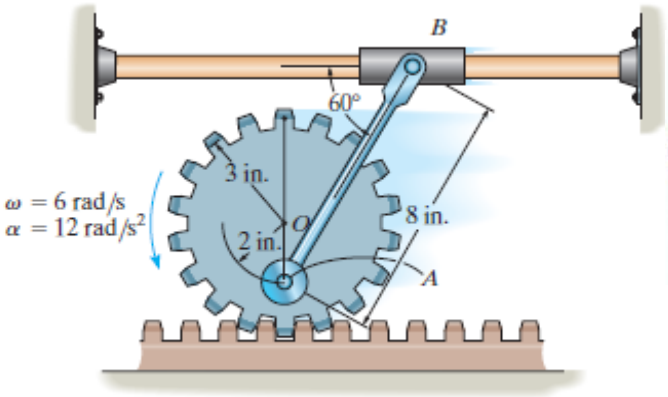
Problem 5. At this instant, the gear has the angular motion shown. Determine the acceleration of point ***B*** and the link's angular acceleration. At this instant $\omega_{AB} = 0$.



CLASSIFY MOTION

WHEEL - GPM

B - TRANS

AB - GPM (BUT SINCE $\omega_{AB}=0$, TRANSLATION)

RELATIVE ACCELERATION

$a_A = a_O + a_{A/O} = a_B + a_{A/B}$

$\leftarrow + \quad a_O = 36$

6 rad/s T, 2", 12 rad/s²

$a_{AT} = \alpha r = 12(2) = 24$

$a_{AN} = \omega^2 r = (6)^2(2) = 72$

$= \rightarrow a_B + \quad 60°, \alpha_{AB}$

$a_{AT} = \alpha r = \alpha_{AB}(8)$

$a_{AN} = \omega^2 r = 0$

$\rightarrow x \quad -36 + 24 = a_B - \alpha_{AB}(8)\sin 60$

$\uparrow y \quad 0 + 72 = 0 + \alpha_{AB}(8)\cos 60$

$\alpha_{AB} = 18 \text{ rad/s}^2 \curvearrowright$

$a_B = 113 \text{ m/s}^2 \rightarrow$

Answer: $a_B = 113 \text{ in/s}^2 \rightarrow$ and $\alpha_{AB} = 18 \text{ rad/s}^2$ CW