To just find α (as required) there is a quicker way...

TAKE MOMENTS ABOUT A

$\sum M_A = I_G\alpha - m a_G d$ (get - sign from R.H.R.)

$-(100)(0.7) + mg(0.5) = I_G\alpha - m a_G (0.5)$

$a_G = -0.5\alpha$ as before

$\Rightarrow -70 + (8)(9.81)(0.5) = (8)(k_g^2)\alpha + (8)(0.5)\alpha(0.5)$

$\Rightarrow \underline{\alpha = -10.3 \text{ rad s}^{-2}}$

Same as before

Note sign $\Rightarrow$ α is in direction opposite to the one we sketched on Diagram

i.e. α is actually CLOCKWISE ↻