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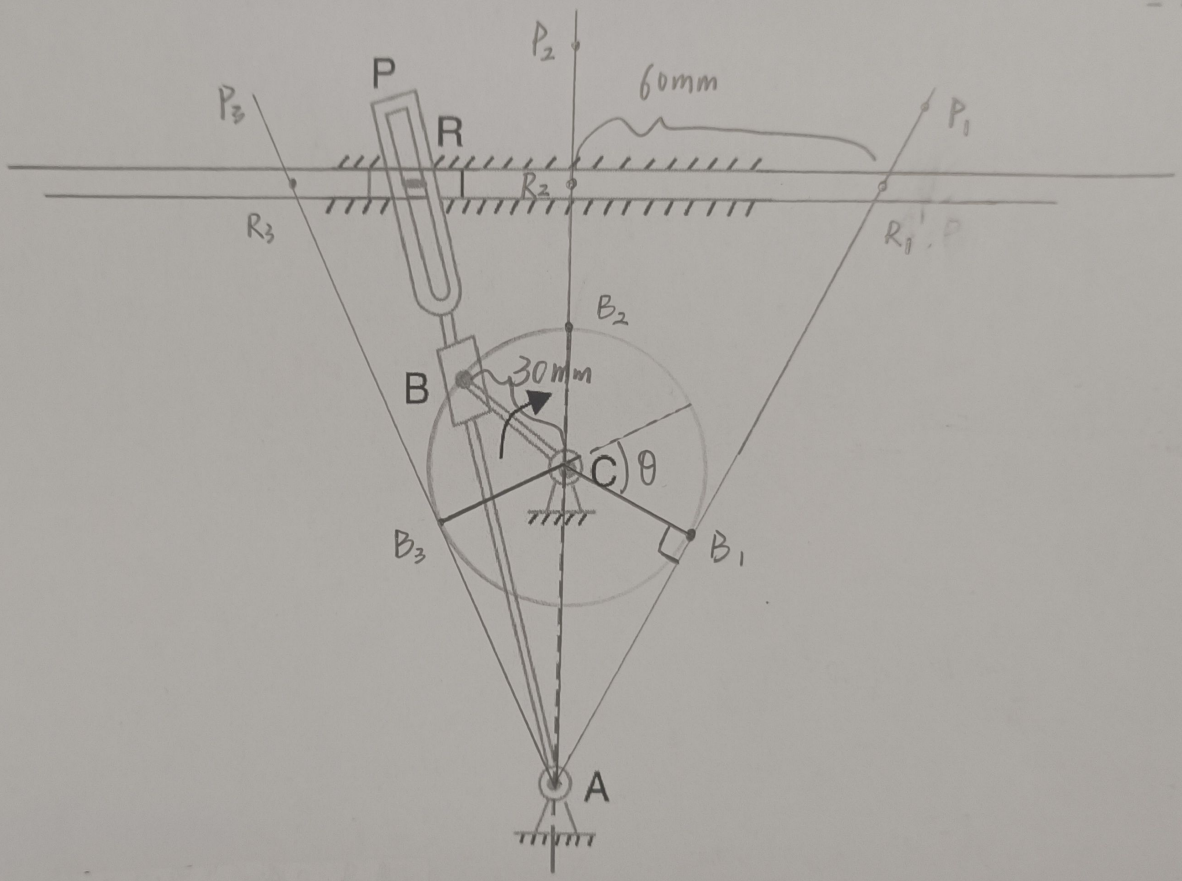
Assignment 3

The following figure shows the layout of a quick return mechanism of the oscillating link type, for a special purpose machine.
The driving crank BC is 30 mm long and time ratio of the working stroke to the return stroke is to be 1.7.
If the length of the working stroke of R is 120 mm, determine the dimensions of AC and AP.



解:

$$K = 1.7 = \frac{180^\circ+\theta}{180^\circ-\theta} \Rightarrow \theta = \frac{140^\circ}{3} \Rightarrow \angle ACB_1 = \frac{180^\circ-\theta}{2} = \frac{200^\circ}{3}$$

$$\Rightarrow AC = \frac{B_1C}{\cos\angle ACB_1} = 75.74 \text{ mm}$$

$$AP = \frac{R_1R_2}{\cos\angle ACB_1} = 151.48 \text{ mm}$$