

1. Draw the workspaces for the following planar robots:

(a) The PPR manipulator shown in Figure 1 with  $d = 0.05\text{m}$ , and joint motion ranges of  $0.1\text{m} \leq a \leq 0.3\text{m}$ ,  $-0.2\text{m} \leq b \leq 0.2\text{m}$  and  $270^\circ \leq c \leq 360^\circ$ .

(b) The PRR robot shown in Figure 2 with  $b = 0.5\text{m}$ ,  $e = 0.1\text{m}$ , and joint motion ranges of  $0.1\text{m} \leq a \leq 0.6\text{m}$ ,  $-45^\circ \leq c \leq 90^\circ$  and  $120^\circ \leq d \leq 240^\circ$ .

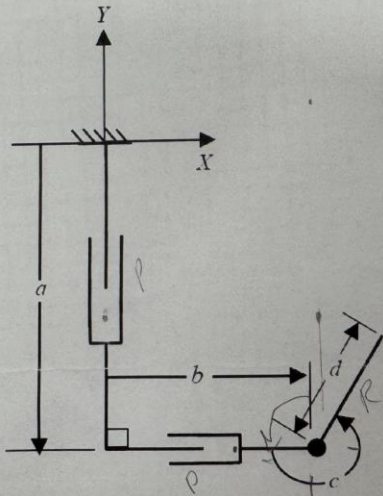
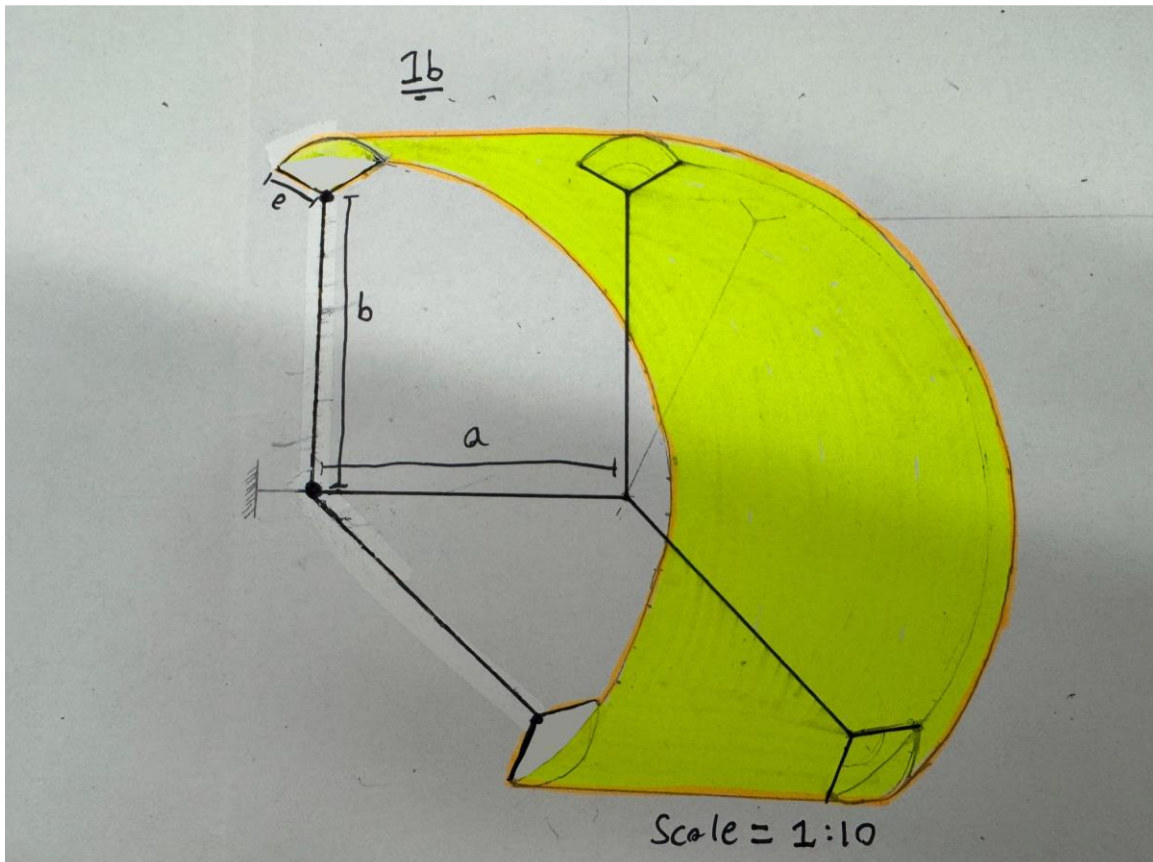
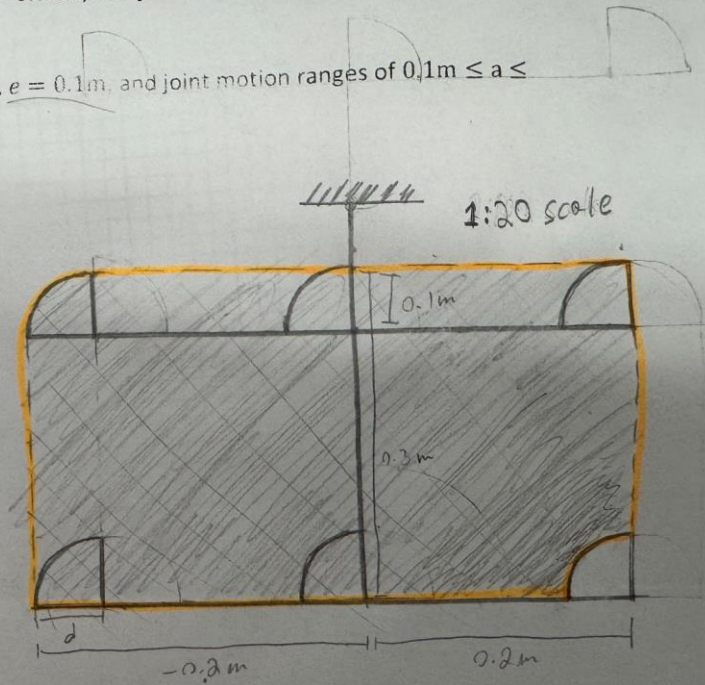


Figure 1. Planar PPR manipulator



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ASSIGNMENT 1