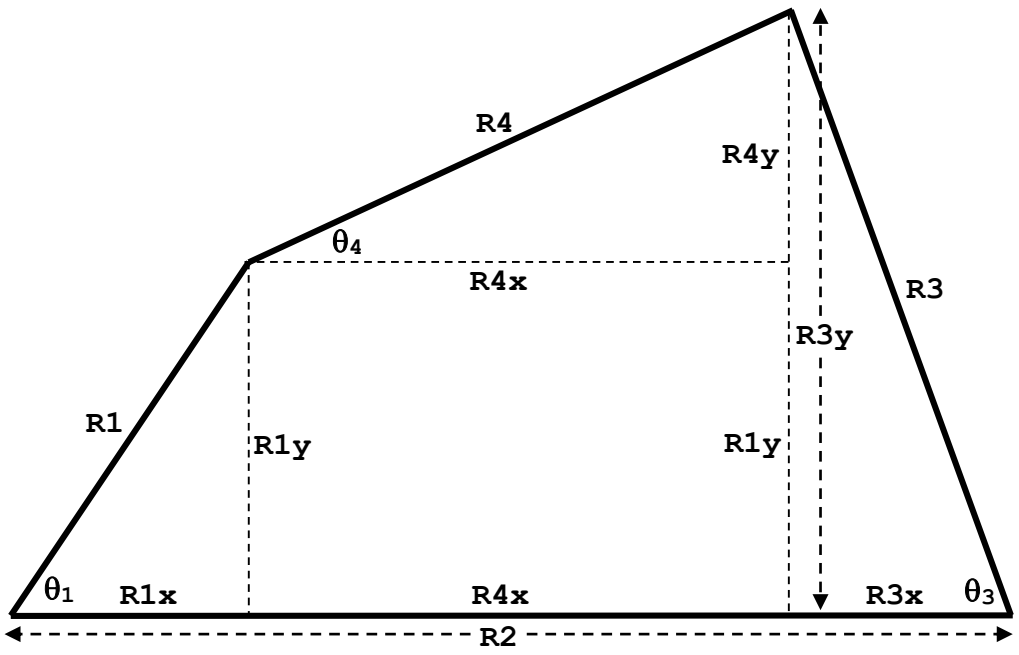

In the four bar linkage shown above, R1 is the driver, R3 is the follower, R4 is the connector, and R2 is the frame, where R1=2.56, R2=4.15, R3=3.76, R4=3.25 . Since the sum of the shortest and longest links is less than the sum of the two remaining links, this linkage is a Grashoff mechanism. There are four possible Grashoff mechanisms depending on which link is the shortest. When the shortest link is the driver, the mechanism is a crank-rocker, which is the case here.

Write a MATLAB program as follows:

1) θ_1 will go from 0° to 180° in steps of 30° .

2) For each value of θ_1 , call the function newton2 to calculate θ_3 and θ_4 . Use 70° and 35° as the initial guesses for θ_3 and θ_4 and 1e-7 as the accuracy factor. Print θ_1, θ_3 and θ_4 .

Hint: Use %3.0f, %.5f and %.5f as the placeholders to print θ_1, θ_3 and θ_4 .

The output of this program should look like this:

```
theta1 =   0   theta3 = 59.30702   theta4 = 95.81439
theta1 =  30   theta3 = 92.62453   theta4 = 49.62875
theta1 =  60   theta3 = 89.85339   theta4 = 28.34358
theta1 =  90   theta3 = 73.43150   theta4 = 18.73519
theta1 = 120   theta3 = 52.78092   theta4 = 13.83516
theta1 = 150   theta3 = 31.84245   theta4 = 12.50527
theta1 = 180   theta3 = 15.60512   theta4 = 18.13271
```