```
%Canopy hinge gas spring force
clc; clear;

% theta1 = input("Input angle 1 (in degrees): "); %angle from horizontal to
gas piston
% theta2 = input("Input angle 2 (in degrees): "); %smallest angle from long
arm to horizontal
% theta3 = input("Input angle 3 (in degrees): "); %angle of rip of top from
horizontal
% theta4 = input("Input angle 4(in degrees): "); %gas spring force

%%
% To compute the force required from the gas spring for equilibrium
% uncomment the angles below, or uncomment lines 4-7 to input each angle

%Open angles
% theta1 = 65.1;
% theta2 = 52.5;
% theta3 = 83.3;
% theta4 = 18.4;
% dx = 0.0142;
% dy = 0.0719;

%45 degrees
% theta1 = (180-84.3);
% theta2 = 48.3;
% theta3 = 45.3;
% theta4 = 16.87;
% dx = 0.0489;
% dy = 0.0546;

%35 deg
% theta1 = (180-71.1);
% theta2 = 42.7;
% theta3 = 35.0;
% theta4 = 14.26;
% dx = 0.0601;
% dy = 0.0420;

%30 deg
% theta1 = (180-63.87);
% theta2 = 39.1;
% theta3 = 30.1;
% theta4 = 12.03;
% dx = 0.0644;
% dy = 0.0338;

%25 deg
% theta1 = (180-56.8);
% theta2 = 35.4;
% theta3 = 25.0;
% theta4 = 10.18;
% dx = 0.0642;
% dy = 0.0340;
```

```
L1 = 0.3; L2 = 0.205; L3 = 0.288; %distance between mounting points
W = 75; %weight on each hinge

Fbe =
(W*cosd(theta3)*(L3+L2))/(L2*cosd(theta3)*sind(theta2)+cosd(theta2)*L2*sind(t
heta3));
Fay = -W+Fbe*sind(theta2) ;
Fax = Fbe*cosd(theta2);

P =
(Fax*L1*sind(theta1)+Fay*L1*cosd(theta1))/(cosd(theta4)*dy+sind(theta4)*dx)
%force in Newtons
P = P/4.448 %P in pounds
```