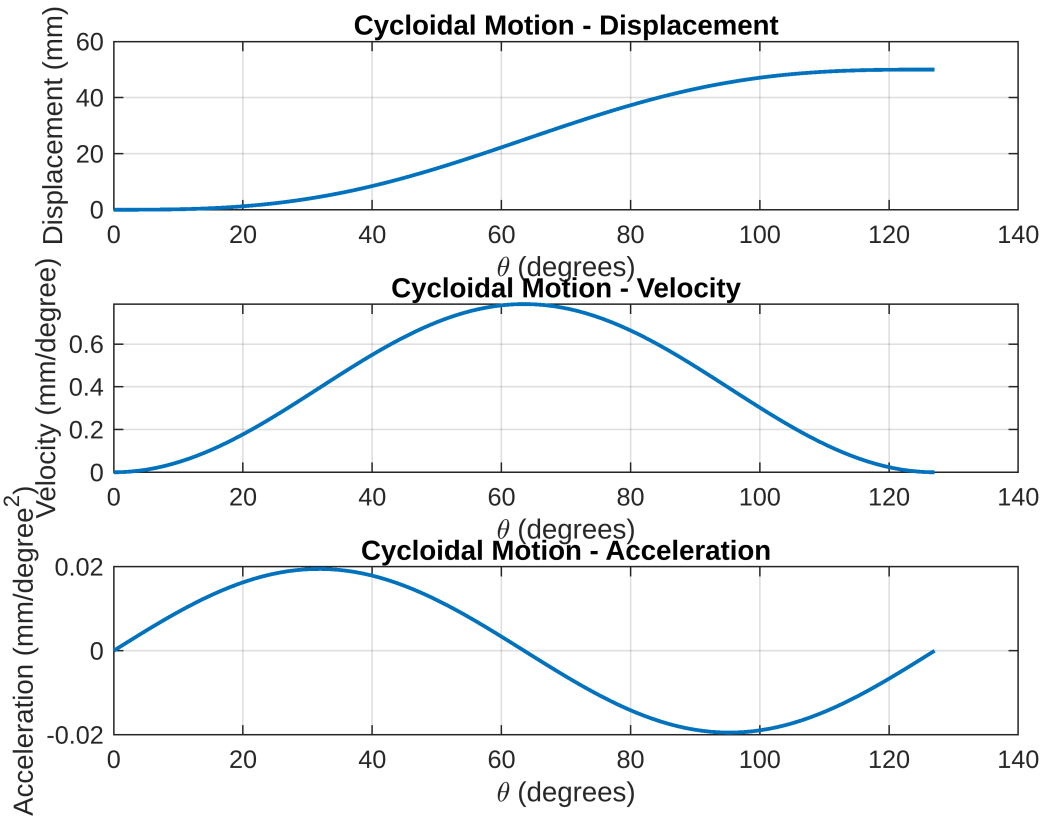
```
% Cycloidal Motion of a Cam-Follower System
clearvars;
w = 1;
% Parameters
h = 50;   % Total lift (mm)

Beta1 = 127.05;   % Rise or return angle (degrees)

theta1 = linspace(0, Beta1, 100);   % Angular range for rise or return

% Displacement (S), Velocity (V), and Acceleration (A):

S = h * (theta1/Beta1 - (1/(2*pi))*sin(2*pi*theta1/Beta1));

V = (h*w/Beta1)*(1 - cos(2*pi*theta1/Beta1));

A = (2*pi*h*w^2/Beta1^2)*sin(2*pi*theta1/Beta1);

% Plotting Displacement, Velocity, and Acceleration
figure;

% Displacement:
subplot(3,1,1);
plot(theta1, S, 'LineWidth', 1.5);
title('Cycloidal Motion - Displacement');
xlabel('\theta (degrees)');
ylabel('Displacement (mm)');
grid on;

% Velocity:
subplot(3,1,2);
plot(theta1, V, 'LineWidth', 1.5);
title('Cycloidal Motion - Velocity');
xlabel('\theta (degrees)');
ylabel('Velocity (mm/degree)');
grid on;

% Acceleration:
subplot(3,1,3);
plot(theta1, A, 'LineWidth', 1.5);
title('Cycloidal Motion - Acceleration');
xlabel('\theta (degrees)');
ylabel('Acceleration (mm/degree^2)');

grid on;
```


Cycloidal Motion - Displacement
Displacement (mm)
60
40
20
0
0
20
40
60
80
100
120
140
θ (degrees)
Cycloidal Motion - Velocity
Velocity (mm/degree)
0.6
0.4
0.2
0
0
20
40
60
80
100
120
140
θ (degrees)
Cycloidal Motion - Acceleration
Acceleration (mm/degree2)
0.02
0
-0.02
0
20
40
60
80
100
120
140
θ (degrees)