



% Define the damping coefficient and spring constant

m = 1; % mass

k = 1; % spring constant

% Define the damping conditions

underdamped = @(x, y) deal(y, -k/m \* x - 0.5/m \* y); % Underdamped

critically\_damped = @(x, y) deal(y, -k/m \* x - 2/m \* y); % Critically damped

overdamped = @(x, y) deal(y, -k/m \* x - 5/m \* y); % Overdamped