F = @(t,y)-5\*y + 5\*t^2 + 2\*t

tInitial = 0.0; % Initial time

tFinal = 1.0; % Final time

yInitial = 1/3; % Initial value of y

for h = [0.1, 0.05, 0.025]

N=(tFinal- tInitial)/h

y = zeros(N+1,1);

t = zeros(N+1,1);

t(1) = tInitial;

y(1) = yInitial;

for i = 1:N

t(i+1) = t(i) + h;

y(i+1) = y(i) + h\*F(t(i),y(i));

end

plot(t, y, 'DisplayName',num2str(h))

hold on

end

tPlotMin = tInitial;

tPlotMax = tFinal;

yPlotMin = 0.0;

yPlotMax = 2.0;

axis([tPlotMin,tPlotMax,yPlotMin,yPlotMax]);

legend

title('Approximate solution to dy/dt = -5y+5t^2+2t obtained with Euler''s method ')

xlabel('t')

ylabel('y(t)')

