```matlab
 1 % Sounak Ghosh
 2 % 9/28/19
 3 % ECE 202 - Fall 2019 - MATLAB Exercise M4
 4 % (c) Normalized Gaussian
 5
 6 clear % clears all variables in the workplace; avoids common errors
 7 clc % clears all previous outputs in the command window(s)
 8
 9
10 x = linspace(0,10,500);                          % -5 to 5s, needed for plot
11 P = 1/(2*pi^(1/2)) * exp(-(x-5).^2/4);           % function for Normalized↙
Gaussian
12 plot(x, P);                                      % plot of time vs. P(t),↙
with a red line
13 title('ECE 202, Exercise M4, part (c): Normalized Gaussian', 'Fontsize', 24) %↙
Plot title with 24 font
14 xlabel('distance x (m)', 'Fontsize', 18);        % x axis label
15 ylabel('Probability Distribution P(t)','Fontsize', 18);   % y axis label
```
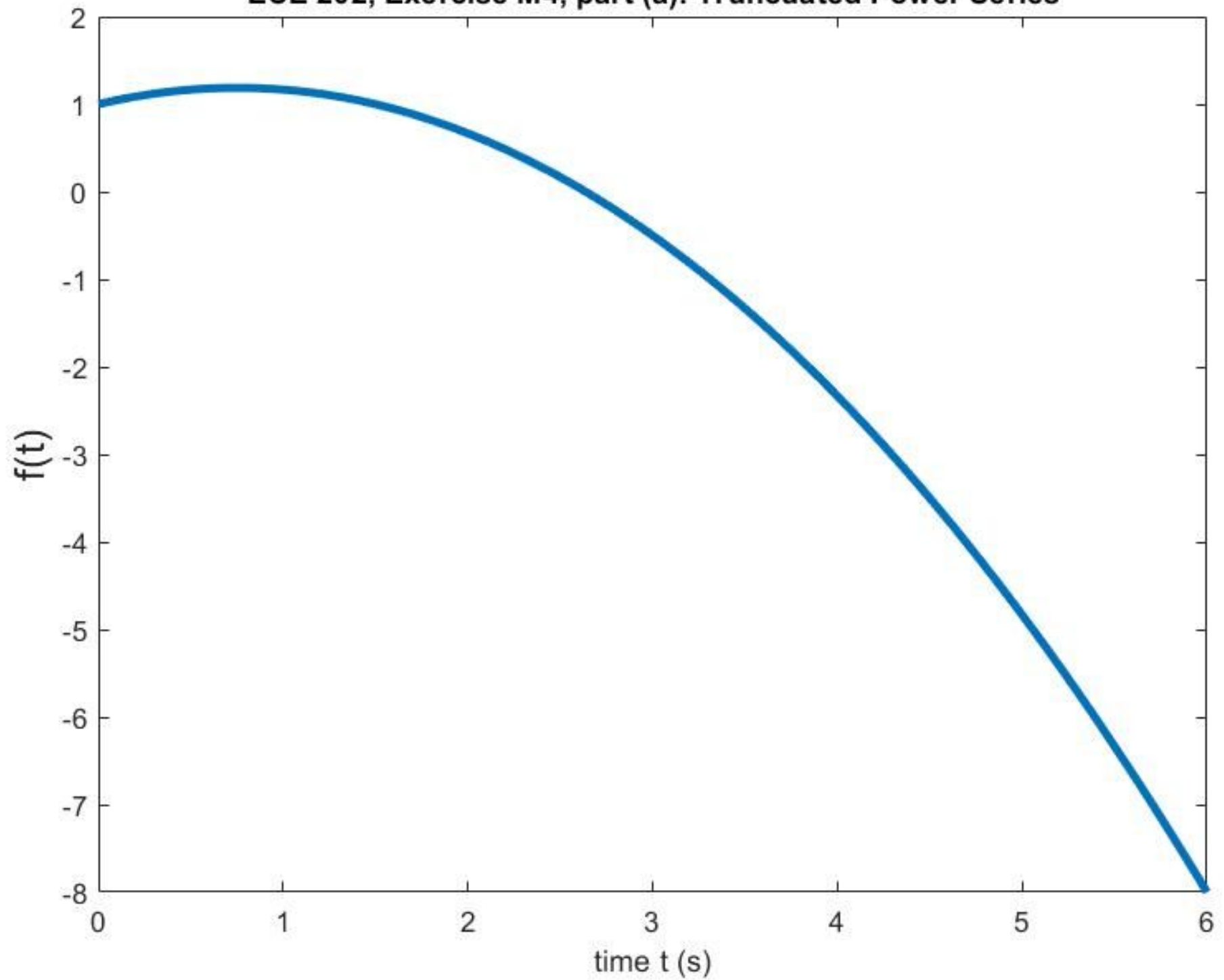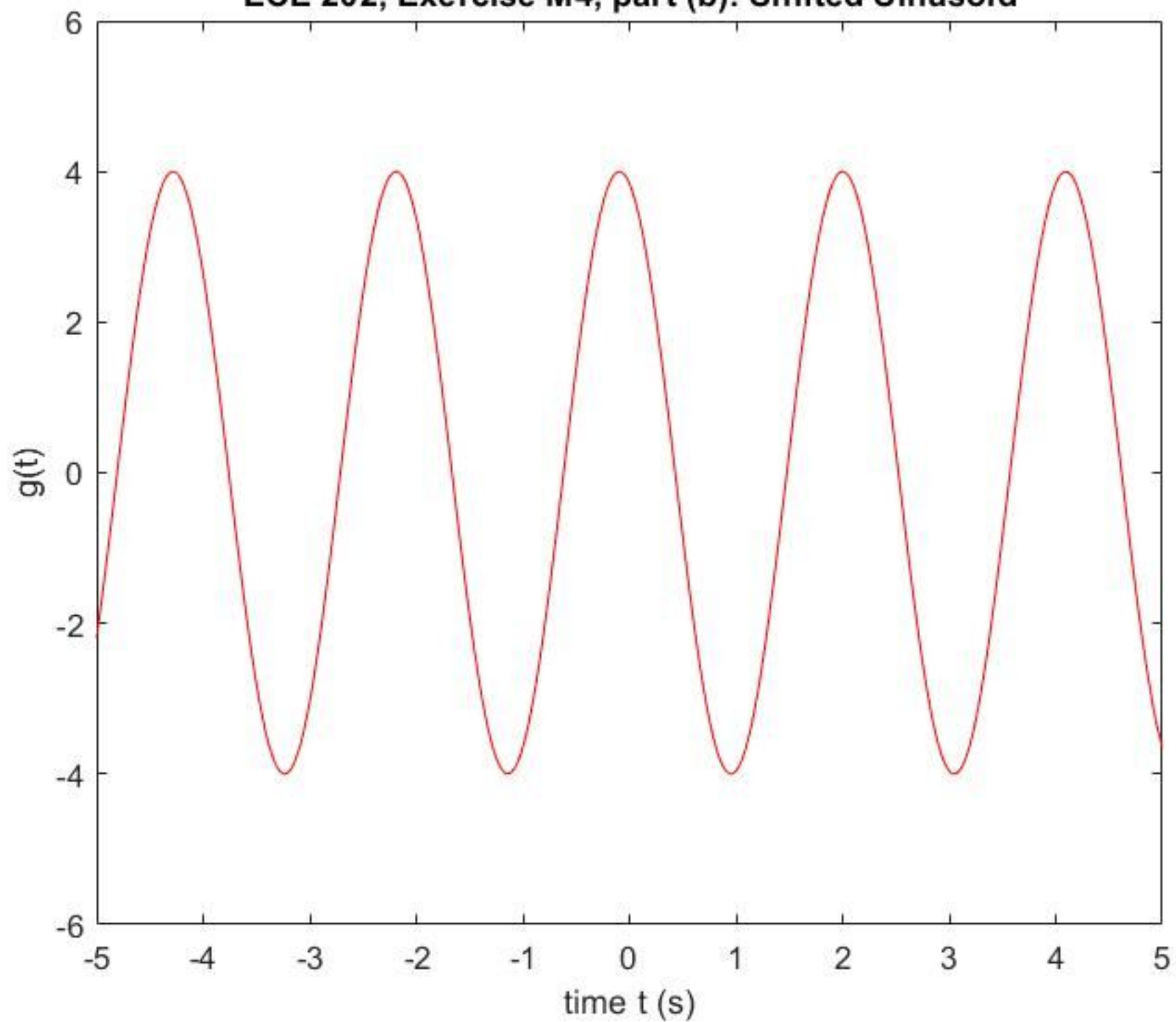
**ECE 202, Exercise M4, part (a): Truncuated Power Series**

```matlab
 1 % Sounak Ghosh
 2 % 9/28/19
 3 % ECE 202 - Fall 2019 - MATLAB Exercise M4
 4 % (b) Shifted sinusoid
 5
 6 clear % clears all variables in the workplace; avoids common errors
 7 clc % clears all previous outputs in the command window(s)
 8
 9
10 t = linspace(-5,5,401);     % -5 to 5s, needed for plot
11 v = 4*cos(3*(t - 2));       % function for Shifted sinusoid
12 plot(t,v,'r');               % plot of time vs. g(t), with a red line
13 axis([-inf inf -6 6]);      % shifts the vertical axis to be -6 to 6.
14 title('ECE 202, Exercise M4, part (b): Shifted Sinusoid'); % Plot title
15 xlabel('time t (s)');       % x axis label
16 ylabel('g(t)')             % y axis label
17
```

ECE 202, Exercise M4, part (b): Shifted Sinusoid

```matlab
 1 % Sounak Ghosh
 2 % 9/28/19
 3 % ECE 202 - Fall 2019 - MATLAB Exercise M4
 4 % (c) Normalized Gaussian
 5
 6 clear % clears all variables in the workplace; avoids common errors
 7 clc % clears all previous outputs in the command window(s)
 8
 9
10 x = linspace(0,10,500);                          % -5 to 5s, needed for plot
11 P = 1/(2*pi^(1/2)) * exp(-(x-5).^2/4);           % function for Normalized↙
Gaussian
12 plot(x, P);                                      % plot of time vs. P(t),↙
with a red line
13 title('ECE 202, Exercise M4, part (c): Normalized Gaussian', 'Fontsize', 24) %↙
Plot title with 24 font
14 xlabel('distance x (m)', 'Fontsize', 18);        % x axis label
15 ylabel('P(t)','Fontsize', 18);    % y axis label
```

ECE 202, Exercise M4, part (c): Normalized Gaussian
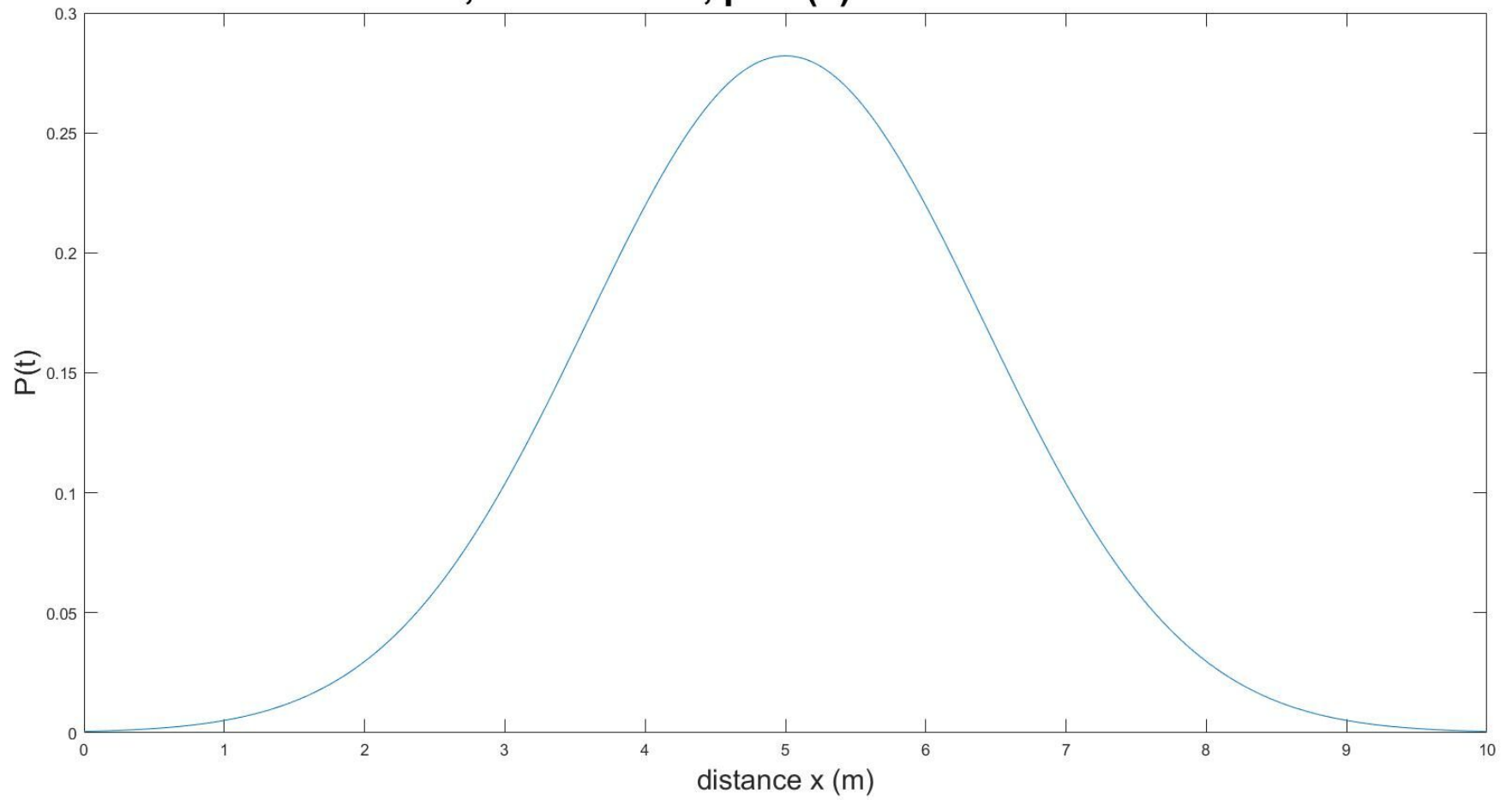
```
 1 % Sounak Ghosh
 2 % 9/28/19
 3 % ECE 202 - Fall 2019 - MATLAB Exercise M4
 4 % (d) Three dampings for parallel RLC
 5
 6 clear % clears all variables in the workplace; avoids common errors
 7 clc % clears all previous outputs in the command window(s)
 8
 9
10 tms = linspace(0,40,401);                    % 0 to 40 ms, needed for plot
11 t = tms * 10^(-3);
12 v1 = 16*exp(-800*t) - 4*exp(-200*t);         % Function for v2
13 v2 = exp(-500*t).*(12 - 6000*t);             % Function for v2
14 v3 = exp(-120*t).*(12*cos(450*t) - 5*sin(450*t)); % Function for v3
15 plot(tms,v1,'r',tms,v2,'g',tms,v3,'b');          % plot for v1(t), v2(t) and v3↙
(t)
16 xlabel('time t (ms)');                       % X axis Label
17 ylabel('voltage v(t)');                      % Y axis Label
18 title('ECE 202, Exercise M4, part (d): Three dampings for parallel RLC') % Plot↙
title
19 legend('v1 - Overdamped','v2 - Critically damped','v3 - underdamped')
```

ECE 202, Exercise M4, part (d): Three dampings for parallel RLC

voltage v(t)

time t (ms)

- v1 - Overdamped
- v2 - Critically damped
- v3 - underdamped