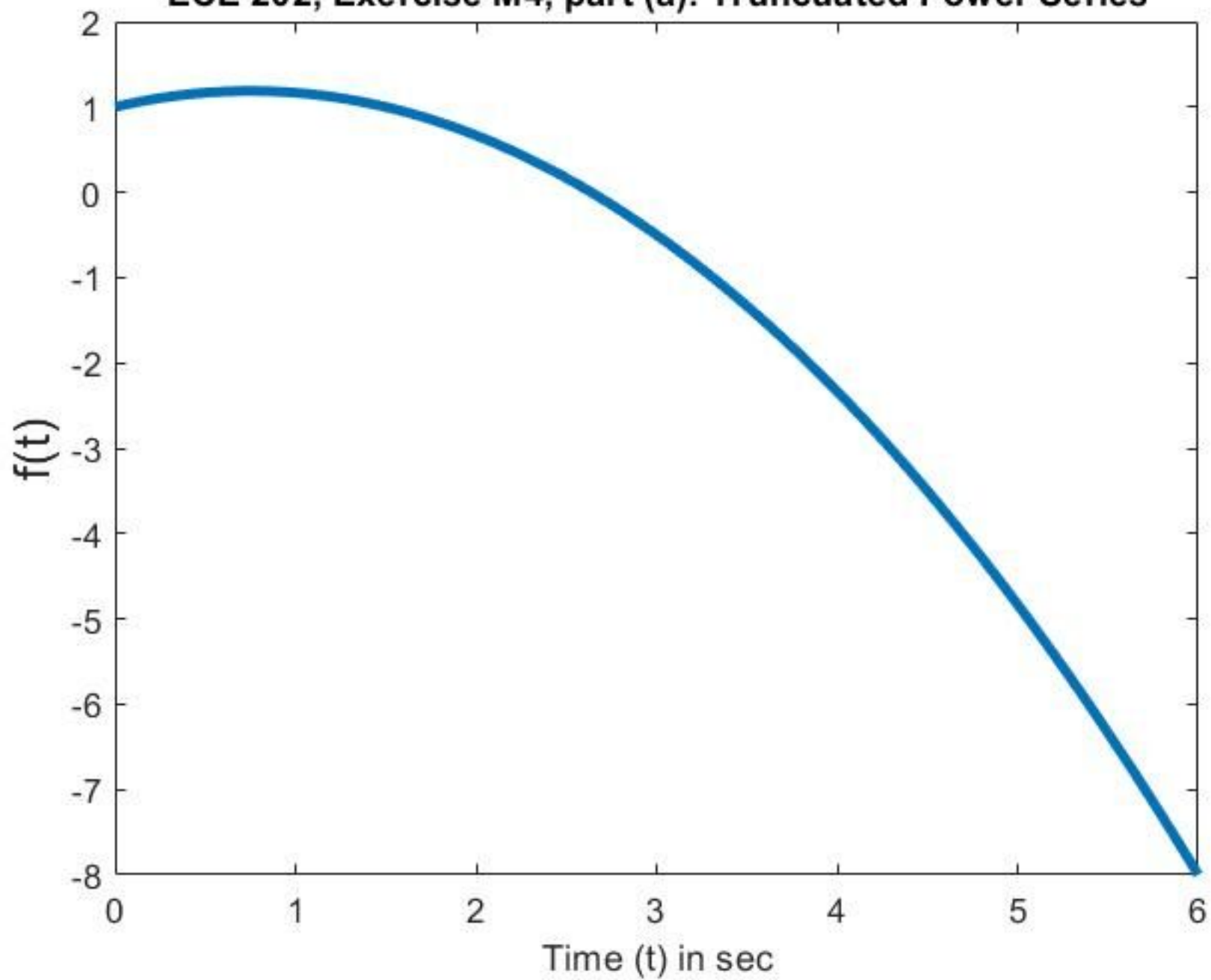


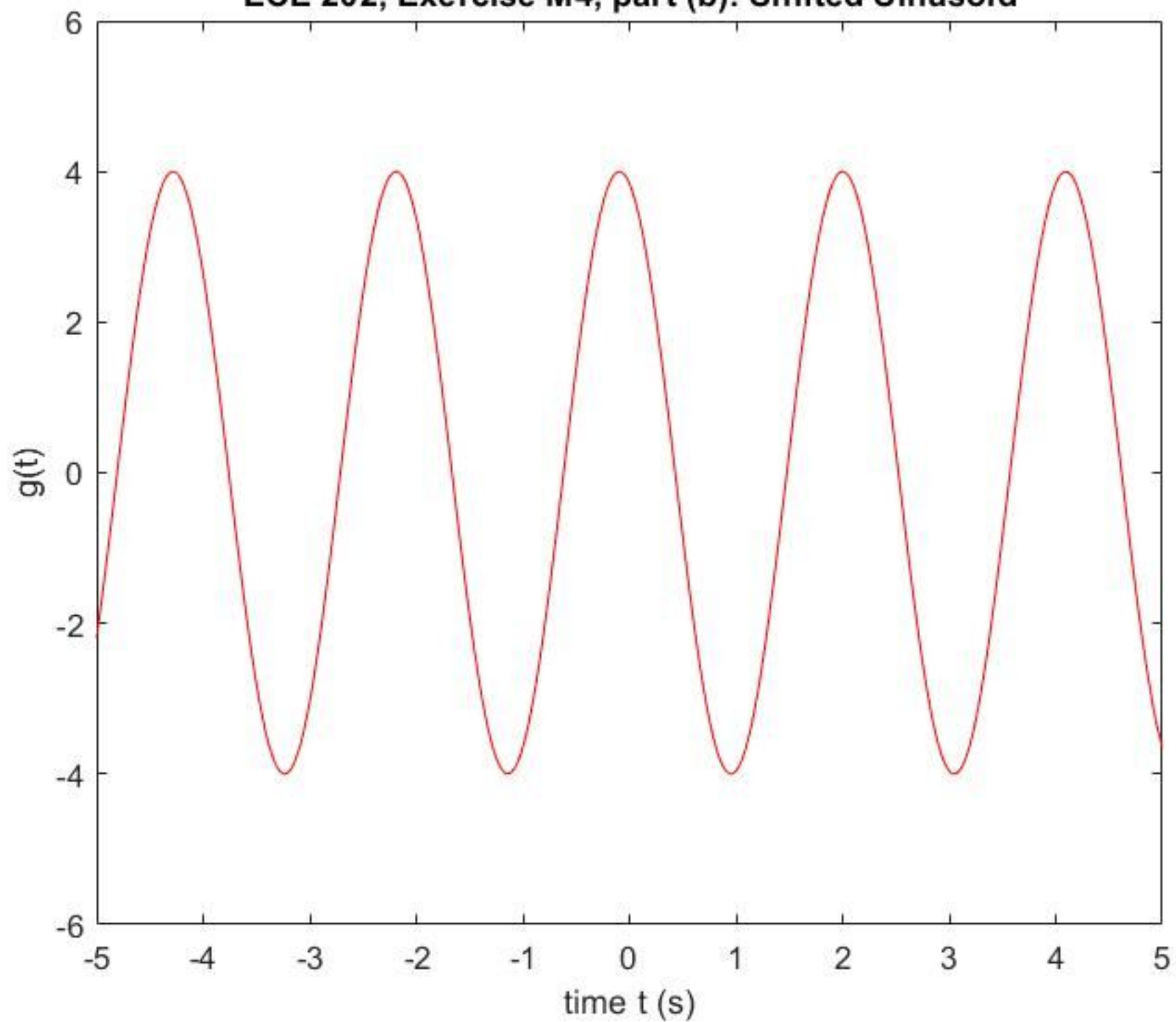
```
1 % Sounak Ghosh
2 % 9/28/19
3 % ECE 202 - Fall 2019 - MATLAB Exercise M4
4 % (a) MATLAB script of a Truncated Power Series  $f(t)=1+t/2-t^2/3$ 
5
6
7 clear % clears all variables in the workplace; avoids common errors
8 clc % clears all previous outputs in the command window
9
10
11 t = linspace(0,6,401);           % 0 to 2s, needed for plot
12 f = 1 + t/2 - t.^2/3;           % function for truncated power series
13 plot(t, f, 'LineWidth', 3)       % plot of time vs. f(t), with 3 thickness
14 title('ECE 202, Exercise M4, part (a): Truncated Power Series') %plot title
15 xlabel('Time (t) in sec')        % X axis label
16 ylabel('f(t)', 'FontSize', 15)   % Y axis label
17
18
19
20
```

ECE 202, Exercise M4, part (a): Truncated Power Series



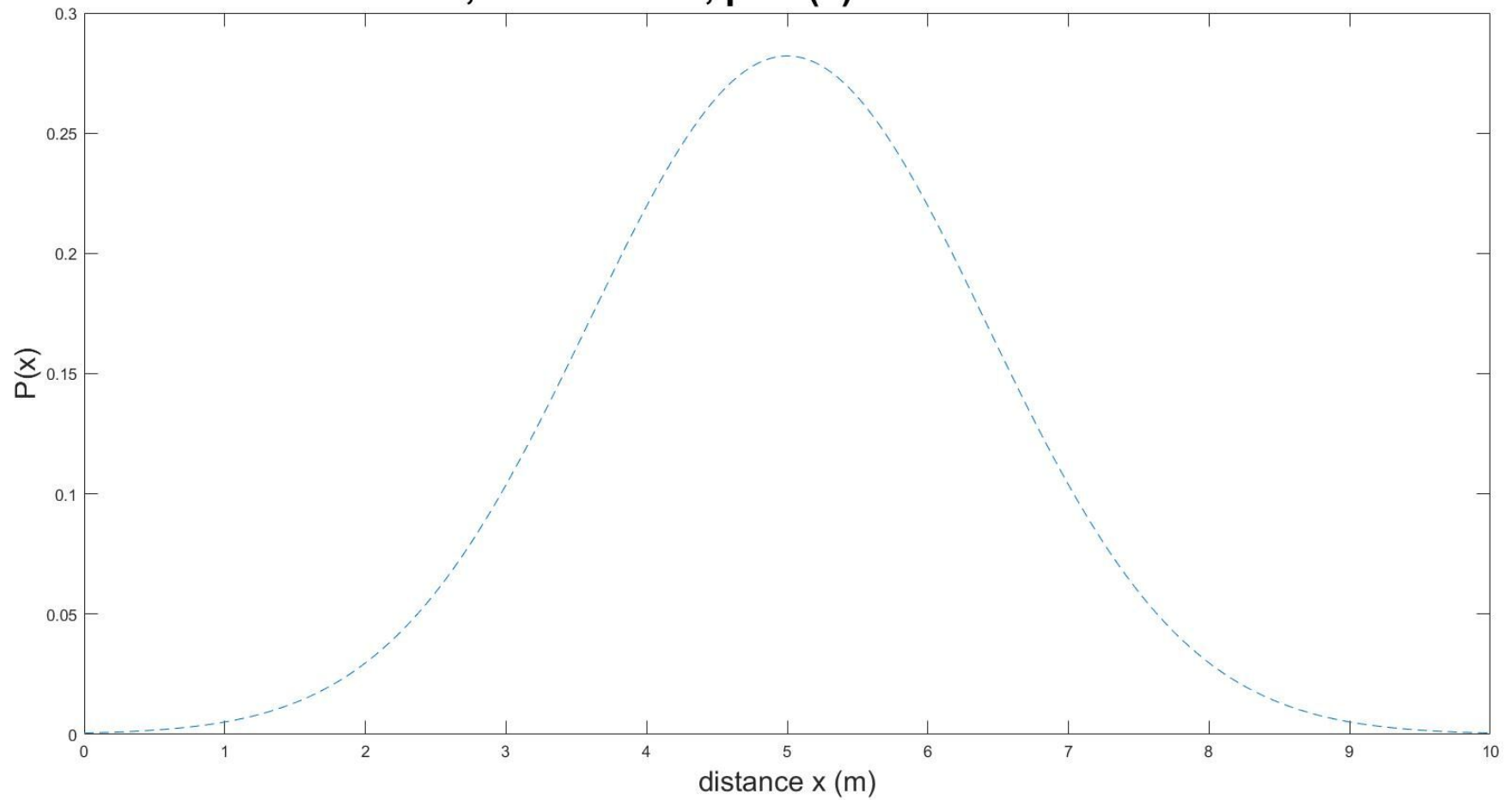
```
1 % Sounak Ghosh
2 % 9/28/19
3 % ECE 202 - Fall 2019 - MATLAB Exercise M4
4 % (b) Shifted sinusoid
5
6 clear % clears all variables in the workplace; avoids common errors
7 clc % clears all previous outputs in the command window(s)
8
9
10 t = linspace(-5,5,401); % -5 to 5s, needed for plot
11 v = 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



```
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
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(x)', '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 ax = gca;
17 ax.FontSize = 18;
18 xlabel('time t (ms)'); % X axis Label
19 ylabel('voltage v(t)'); % Y axis Label
20 title('ECE 202, Exercise M4, part (d): Three dampings for parallel RLC') % Plot title
21 legend('Overdamped','Critically-damped','Underdamped')
22 grid on;
```

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

