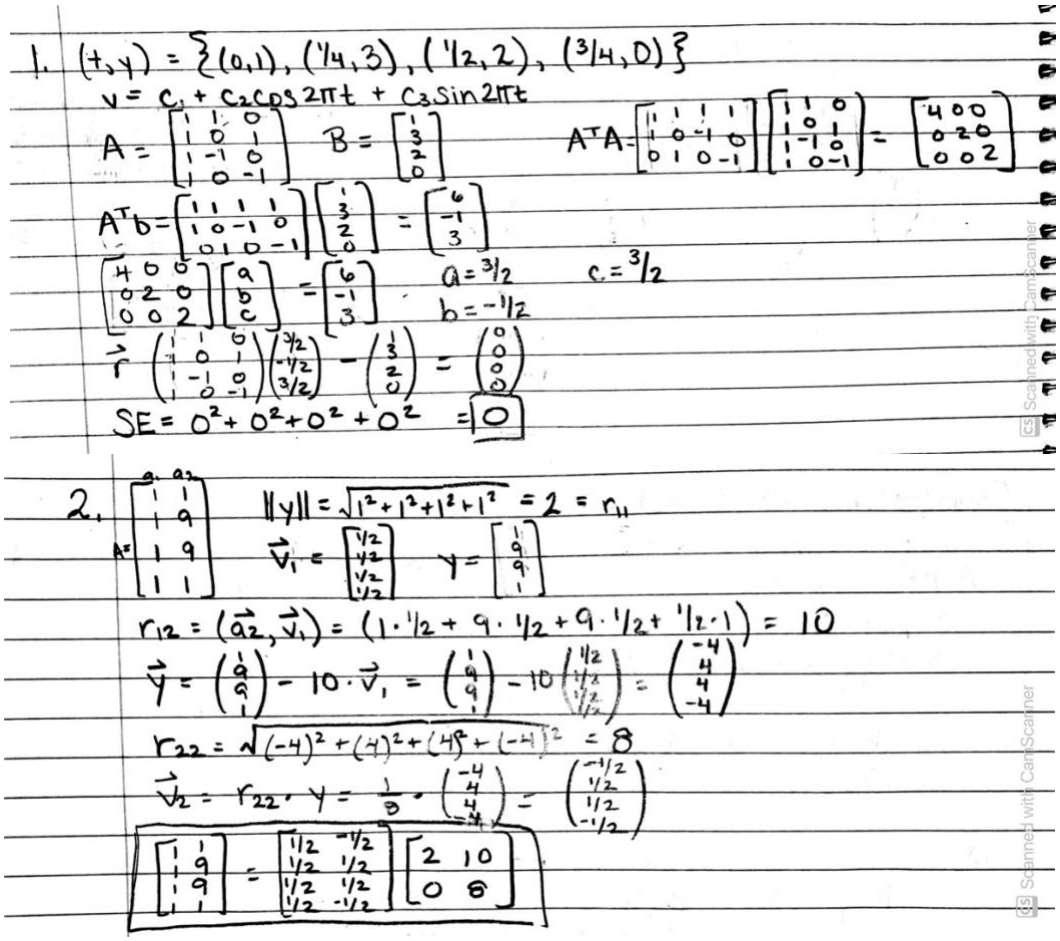
Ally Racho
CMPSC456
Homework 3

1.

2.



3.

```
%% Homework 3 - Question 3

x = [1.0, 1.1, 1.3, 1.5, 1.9, 2.1]; % given x data values
y = [1.84, 1.96, 2.21, 2.45, 2.94, 3.18]; % given y data values

% least squares polynomials
deg1 = polyfit(x, y, 1); % degree 1
deg2 = polyfit(x, y, 2); % degree 2
deg3 = polyfit(x, y, 3); % degree 3

% From this we can see the following polynomials are produced
P1 = @(x)0.6209 + 1.2196*x;
P2 = @(x)0.5966 + 1.2533*x - 0.0109.*x.^2;
P3 = @(x)0.6290 + 1.1850*x + 0.0353*x.^2 - 0.0100*x.^3;


% error
deg1errSum = sum((y - plotp1).^2); % = 2.7194e^-05
deg2errSum = sum((y - plotp2).^2); % = 1.8015e^-05
deg3errSum = sum((y - plotp3).^2); % = 1.7407e^-05
```

```
% plot data and polynomials
plotp1 = polyval(deg1, x);
figure(1)
plot(x,y,'o')
hold on
plot(x,plotp1)
hold off
title('Degree 1 Polynomial and Data Points')

plotp2 = polyval(deg2, x);
figure(2)
plot(x,y,'o')
hold on
plot(x,plotp2)
hold off
title('Degree 2 Polynomial and Data Points')

plotp3 = polyval(deg3, x);
figure(3)
plot(x,y,'o')
hold on
plot(x,plotp3)
hold off
title('Degree 3 Polynomial and Data Points')
```

Graph outputs: