CIEG 675 - Matlab For Engineering Analysis (Lab 1)

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Problem 1

- Vector is supressed due to long vectors

```
row_vec = 1:0.02:10;
```

Problem 2

```
mat = [1 2 3;4 5 6;7 8 9]
```

```
mat =

     1     2     3
     4     5     6
     7     8     9
```

Problem 3

```
diagonal = diag(mat)
```

```
diagonal =

     1
     5
     9
```

Problem 4

```
corners = [mat(1,1),mat(1,end),mat(end,1),mat(end,end)]
```

```
corners =

     1     3     7     9
```

Problem 5

```
mid_row = mat(2,:)
```

```
mid_row =

     4     5     6
```

Problem 6

```
last_col = mat(:,3)
```

```
last_col =

     3
     6
     9
```

Problem 7

```
Survey1 = [1 2; 3 4];
Survey2 = [5 6; 7 8];
Survey3 = [9 10; 11 12];
Survey1(:,:,2) = Survey2;
Survey1(:,:,3) = Survey3;
threeD_array = Survey1
```

```
threeD_array(:,:,1) =

     1     2
     3     4


threeD_array(:,:,2) =

     5     6
     7     8
```

```
threeD_array(:,:,3) =

     9    10
    11    12
```

Problem 8

```
new_var = [1:8,15:24]
```

```
new_var =

  Columns 1 through 13

     1     2     3     4     5     6     7     8    15    16    17
 18    19

  Columns 14 through 18

    20    21    22    23    24
```

Problem 9

- Will require 401 data to evenly space 1/4 time interval

```
time_vec = linspace(0,100,401);
```

Problem 10

```
col_vec = (-30:0.2:30)';
```

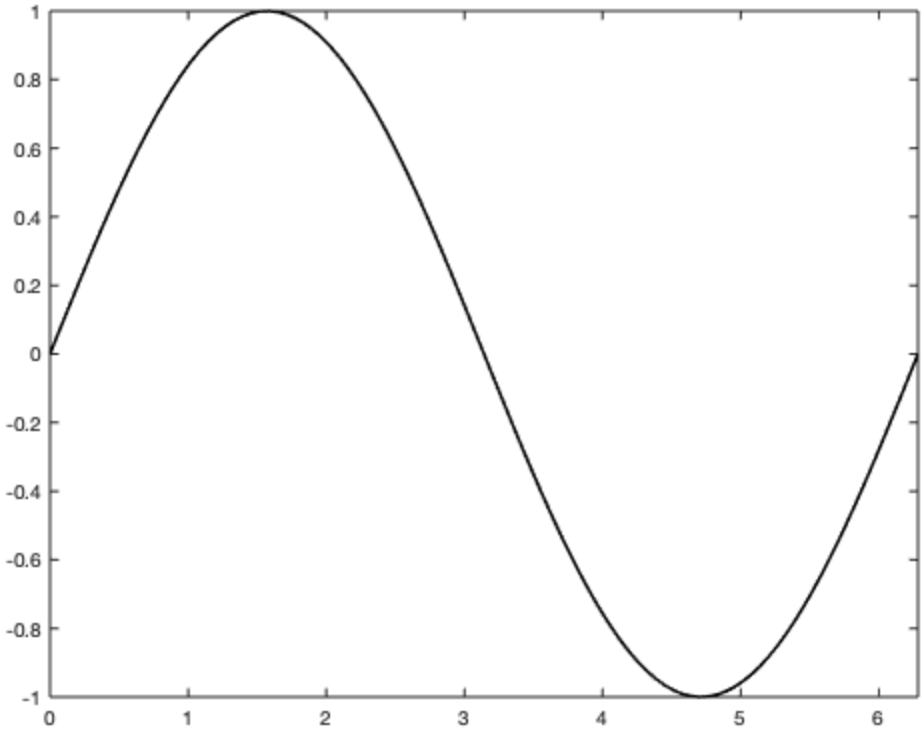
Problem 11

- Assuming increment of 1

```
col_vec2 = (0:1:100)';
descending_colvec2 = sort(col_vec2,'descend');
```

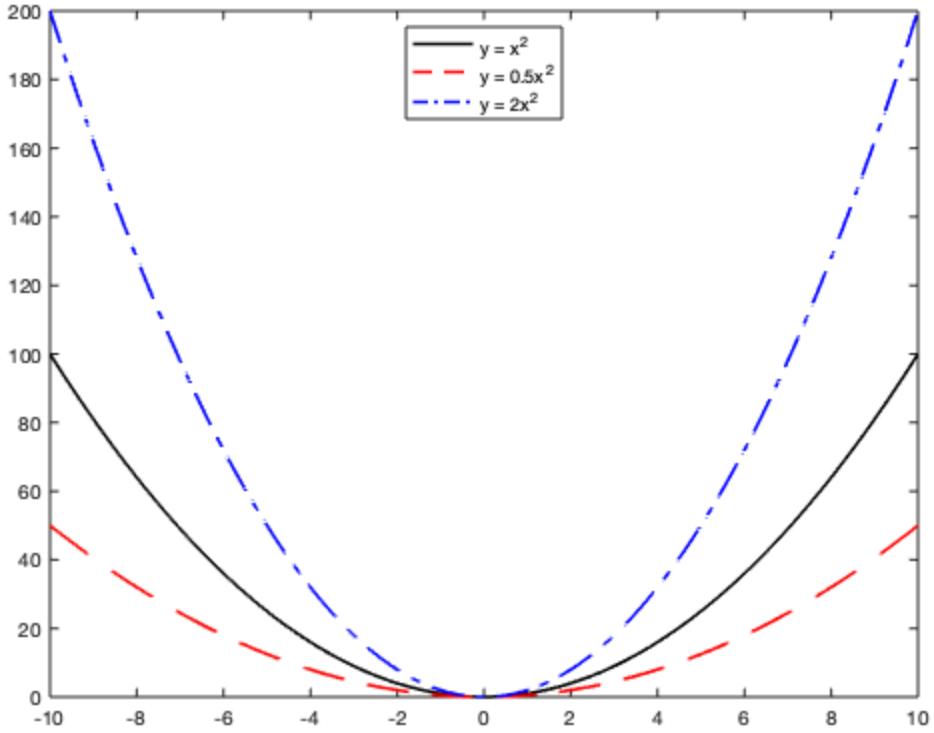
Problem 12

```
time = linspace(0,2*pi,100);
eqn = sin(time);
figure('name','Sine Wave') %name figure bfore plot
plot(time,eqn,'k-','linewidth',1.5)
xlim([0,2*pi]); ylim([-1,1])
```



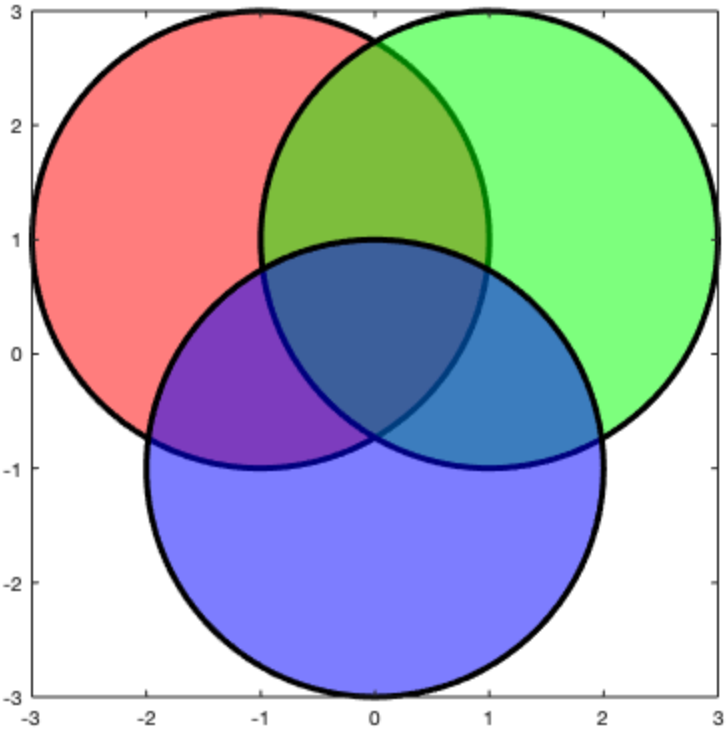
Problem 13

```
x = linspace(-10,10,1000);
a = [1,0.5,2];
color= ['k','r','b'];
line_type = {'-','--','-.'};
figure('name','Parabola y = ax^2')
for i = 1:length(a)
    y = a(i)*x.^2;
    plot(x,y,line_type{i},'color',color(i),'linewidth',1.5)
    hold on
end
legend('y = x^2','y = 0.5x^2','y = 2x^2','location','north')
hold off
```



Problem 14

```
theta = linspace(0,2*pi,100); r = 2;
x1 = -1 + r*cos(theta); y1 = 1 + r*sin(theta);
x2 = 1 + r*cos(theta); y2 = 1 + r*sin(theta);
x3 = r*cos(theta); y3 = -1 + r*sin(theta);
x_coord = [x1;x2;x3]; y_coord = [y1;y2;y3];
new_color = ['r','g','b'];
figure('name','Circles')
for i = 1:3
    fill(x_coord(i,:),y_coord(i,:),new_color(i),'linewidth',3)
    hold on
    alpha(0.5)
    axis square
end
hold off
```



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