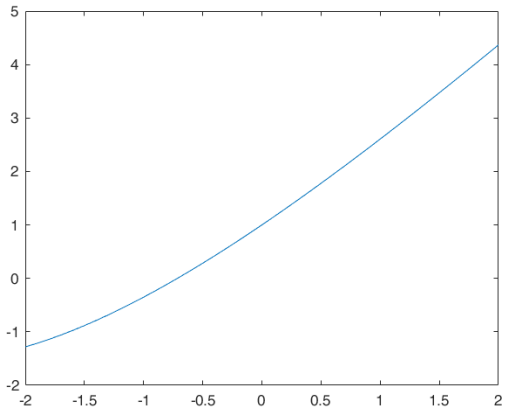
Exercise 1

Code:

```
t=-2:0.1:2;
y=exp(-0.5*t)+2*t;
plot(t,y);
```

Output:



Explanation:

Generates and plots an exponential function with an added linear term.

Exercise 2

Code:

```
N = 5;
s=0;
for n=1:N
s=s+n^2;
end
disp("Sum for N = 5");
display(s);

N = 10;
s=0;
for n=1:N
s=s+n^2;
end
disp("Sum for N = 10");
display(s);
```

Output:

Sum for N = 5

s =55

Sum for N = 10

s =385

Explanation:

Calculates the sum of squares of numbers from 1 to N, where N is first 5, then 10.

Exercise 3

Code:

```
y=zeros(1,N+1);
y(1)=0;
for n=1:N
y(n+1)=y(n)+n^4;
end
```

Output:

y =

```
   0   1   17   98  354  979
```

Explanation:

Computes a sequence where each element is the sum of the previous element and the current index raised to the 4^{th} power, starting from index 1.

Exercise 4

Code:

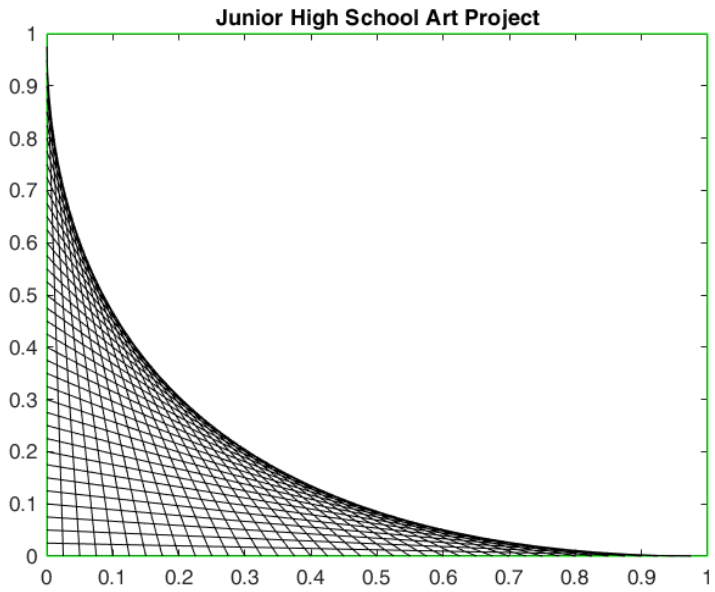
```
% Plot the square
plot([1,0,0,1,1],[0,0,1,1,0],'g');
```

```
hold on;

for n = 1:39
    plot([n/40,0],[0,1-(n/40)],'k')
    hold on;
end

title('Junior High School Art Project');
```

Output:



Explanation:

Draws a green square using plot() function and overlays it with 39 black lines converging towards its top-left corner, creating an artistic effect. The 40^{th} line would be on y-axes hence is not plotted.