Problem 1

```
% Problem 1
A = [0 1 5 3 4 5 7 9 10]
(2/3) * A - 4
```

Problem 2

```
% Problem 2
t = 1:10
x = t.*sin(t)
y = (t-1)./(t+1)
z = sin(t.^2)./t.^2
```

Problem 3

```
% Problem 3
A = rand(4,3)
A(3:4,2:3)
A = [A(:,1) A(:,2) A(:,3) A(:,1)]
A(2:4,2:4) = eye(3)
A = [A(1,:);A(3,:)]
round(A)
A(:)'
```

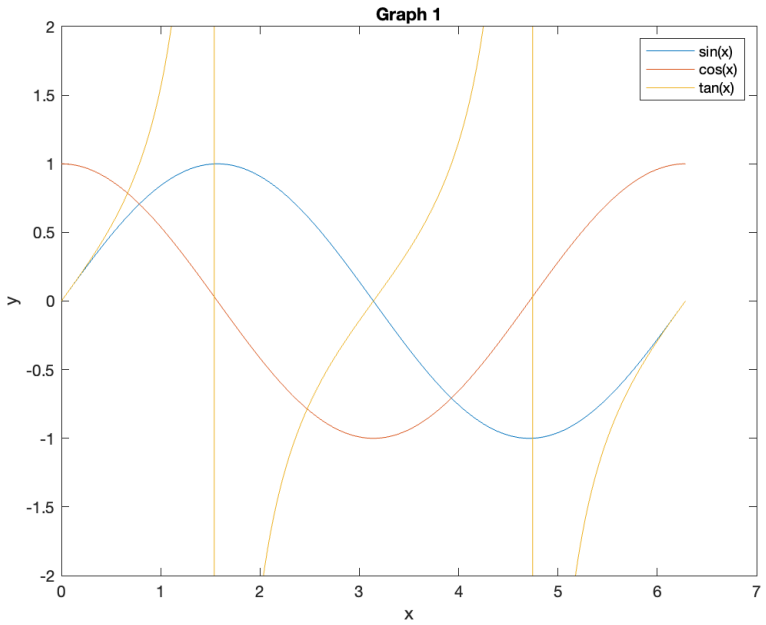
Problem 4

```
% Problem 4
v=0:0.2:12;
M=[sin(v);cos(v)];
size(M)
size(v)
M(:,1:10)'
```

Problem 5

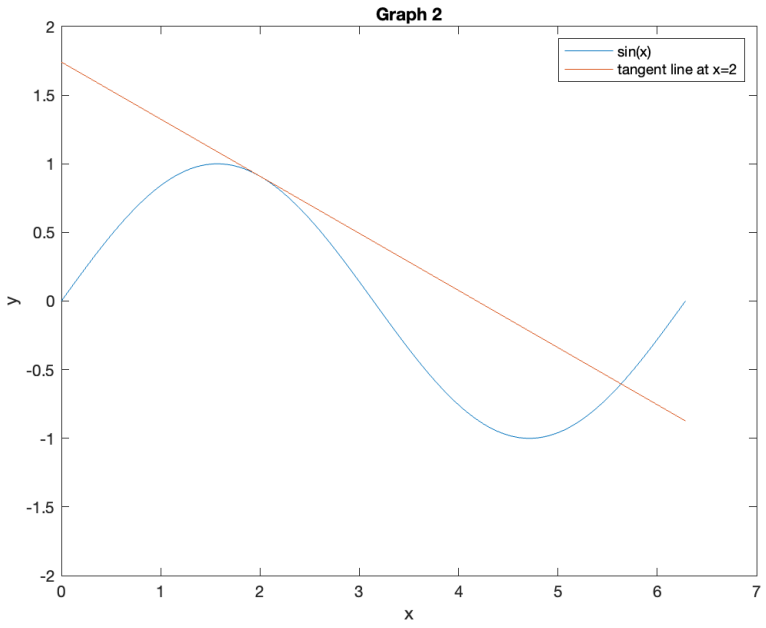
```
% Problem 5
x=0:pi/100:2*pi;
y1=sin(x);
y2=cos(x);
y3=tan(x);

plot(x,y1,x,y2,x,y3)
ylim([-2 2]);
legend('sin(x)','cos(x)','tan(x)')
title('Graph 1')
xlabel('x')
ylabel('y')
```



Problem 6

```
% Problem 6
syms t
f = diff(sin(t));
x=0:pi/100:2*pi;
y1=sin(x);
y2=vpa(subs(f,t,2))*(x-2) + sin(2);
plot(x,y1,x,y2);
ylim([-2 2]);
legend('sin(x)','tangent line at x=2')
title('Graph 2')
xlabel('x')
ylabel('y')
```



Command Line Output

```
>> problem_1

A =

     0     1     5     3     4     5     7     9    10


ans =

   -4.0000   -3.3333   -0.6667   -2.0000   -1.3333   -0.6667    0.6667
         2.0000    2.6667

>> problem_2

t =

     1     2     3     4     5     6     7     8     9    10


x =

    0.8415    1.8186    0.4234   -3.0272   -4.7946   -1.6765    4.5989
         7.9149    3.7091   -5.4402


y =

         0    0.3333    0.5000    0.6000    0.6667    0.7143    0.7500
              0.7778    0.8000    0.8182


z =
```

```
    0.8415   -0.1892    0.0458   -0.0180   -0.0053   -0.0275   -0.0195
           0.0144   -0.0078   -0.0051

>> problem_3

A =

    0.9572    0.4218    0.6557
    0.4854    0.9157    0.0357
    0.8003    0.7922    0.8491
    0.1419    0.9595    0.9340


ans =

    0.7922    0.8491
    0.9595    0.9340


A =

    0.9572    0.4218    0.6557    0.9572
    0.4854    0.9157    0.0357    0.4854
    0.8003    0.7922    0.8491    0.8003
    0.1419    0.9595    0.9340    0.1419


A =

    0.9572    0.4218    0.6557    0.9572
    0.4854    1.0000         0         0
    0.8003         0    1.0000         0
    0.1419         0         0    1.0000


A =

    0.9572    0.4218    0.6557    0.9572
    0.8003         0    1.0000         0


ans =

     1     0     1     1
     1     0     1     0


ans =

    0.9572    0.8003    0.4218         0    0.6557    1.0000    0.9572
              0

>> problem_4

ans =
```

```
     2    61


ans =

     1    61


ans =

          0    1.0000
     0.1987    0.9801
     0.3894    0.9211
     0.5646    0.8253
     0.7174    0.6967
     0.8415    0.5403
     0.9320    0.3624
     0.9854    0.1700
     0.9996   -0.0292
     0.9738   -0.2272

>> problem_5
>> problem_6
```