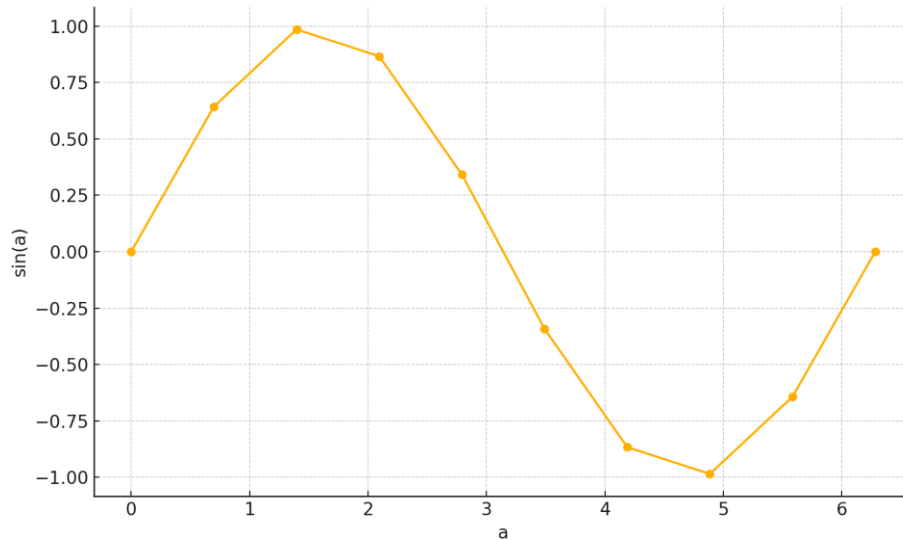


Q1. Plot  $\sin(a)$  for  $a = \text{linspace}(0, 2\pi, 10)$ .

**Code**

```
a = linspace(0,2*pi,10);  
b = sin(a);  
plot(a,b,'-o'); xlabel('a'); ylabel('sin(a)'); grid on;
```



Q2. Find maximum of  $b$  and its index.

**Code**

```
[maxVal, idx] = max(b);  
fprintf('Max of b = %g at index = %d (a = %g)\n', maxVal, idx, a(idx));
```

**Output**

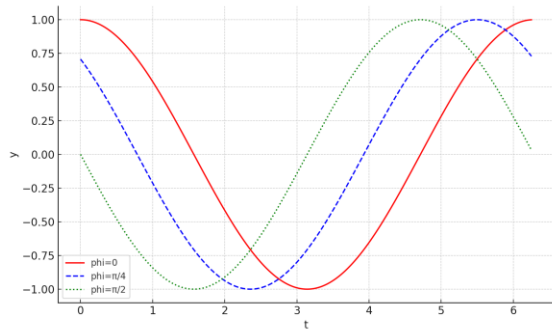
Output: Max of b = 0.9848, index = 2, a = 1.3963

Q4. Plot three cosine signals with different phases.

**Code**

```
t = 0:pi/100:2*pi; A=1; w=1; phi=[0,pi/4,pi/2];  
plot(t,A*cos(w*t+phi(1)), t,A*cos(w*t+phi(2)), t,A*cos(w*t+phi(3)));  
legend('phi=0','phi=pi/4','phi=pi/2');
```

## Output

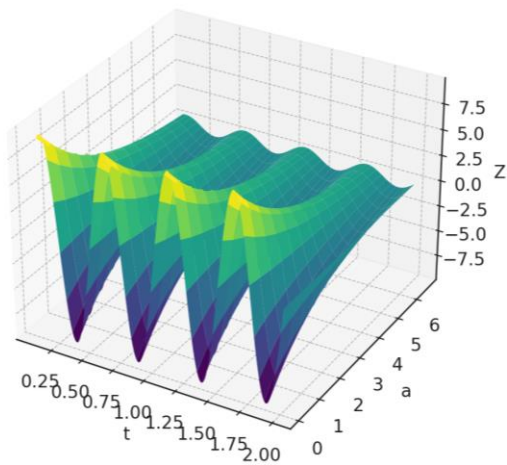


**Q5. Surface plot  $Z = 10 e^{-0.4a} \sin(2\pi f t)$ .**

## Code

```
[t,a] = meshgrid(0.1:0.01:2,0.1:0.5:7);  
Z = 10*exp(-0.4*a).*sin(2*pi*2.*t);  
surf(t,a,Z);
```

## Output

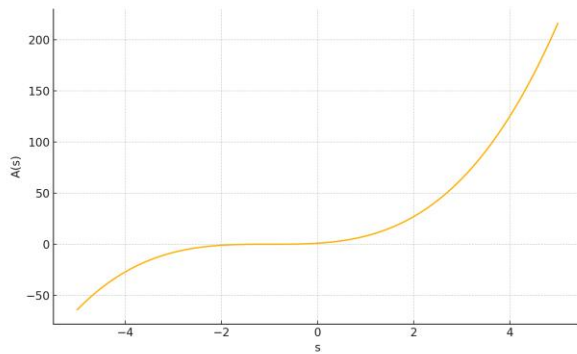


**Q6. Plot polynomial  $A(s) = s^3 + 3s^2 + 3s + 1$ .**

**Code**

```
s = -5:0.1:5; coeff = [1 3 3 1]; A = polyval(coeff,s);  
plot(s,A);
```

**Output**

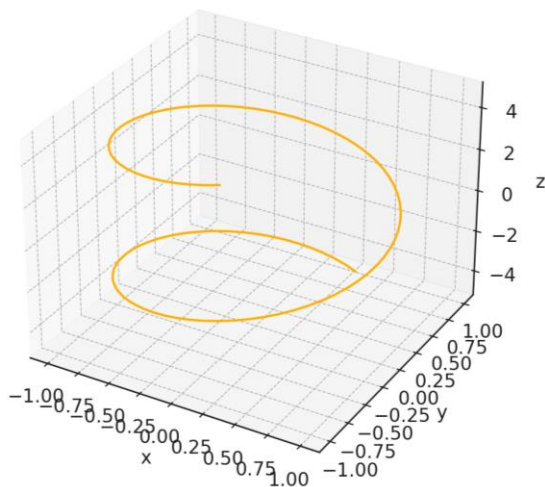


**Q7. 3D Helix plot.**

**Code**

```
t = linspace(-5,5,101);  
x=cos(t); y=sin(t); z=t;  
plot3(x,y,z);
```

**Output**

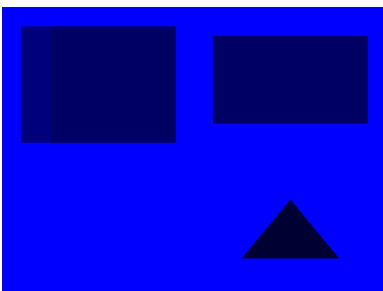
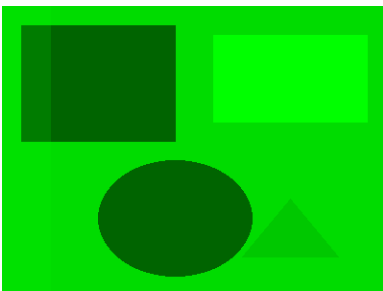
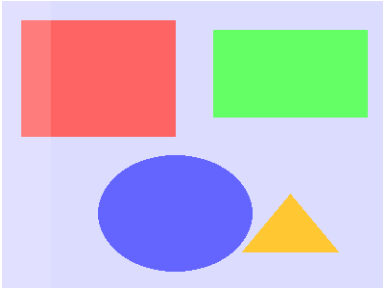


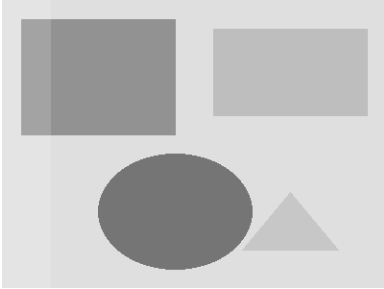
## Q8. Display RGB image and its R/G/B planes and grayscale.

### Code

```
a = imread('image.jpg');  
imshow(a); figure; imshow(a(:,:,1)); figure; imshow(a(:,:,2)); figure; imshow(a(:,:,3)); figure;  
imshow(rgb2gray(a));
```

### Output



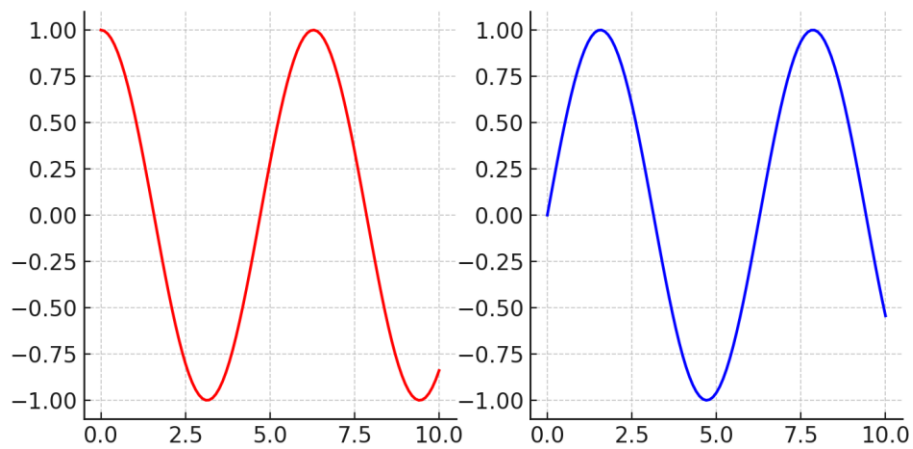


**Q9. Plot  $\cos(x)$  and  $\sin(x)$  side by side using subplot.**

**Code**

```
x = 0:0.1:10;  
subplot(1,2,1); plot(x,cos(x));  
subplot(1,2,2); plot(x,sin(x));
```

**Output**



**Q10. Plot discrete sequence  $\cos(n\pi/4)$  using stem.**

**Code**

```
n = -10:10; y = cos(n*pi/4); stem(n,y);
```

**Output**

