

1a)

```
>> v1=[1;1;1];  
>> v2=[1;1;-2];  
>> v3=[1;-1;0];  
>> dot(v1,v2)
```

ans =

0

```
>> dot(v1,v3)
```

ans =

0

```
>> dot(v2,v3)
```

ans =

0

1c)

```
>> A=[v1 v2 v3]
```

A =

```
1 1 1  
1 1 -1  
1 -2 0
```

```
>> B=inv(A)
```

B =

```
0.3333 0.3333 0.3333  
0.1667 0.1667 -0.3333  
0.5000 -0.5000 0
```

```
>> B*v1
```

ans =

```
1  
0  
0
```

```
>> B*v2
```

```
ans =
```

```
0.0000  
1.0000  
0
```

```
>> B*v3
```

```
ans =
```

```
0  
0  
1
```

2a)

```
>> C=[2/3 1/6 1/6;1/6 2/3 1/6;1/6 1/6 2/3]
```

```
C =
```

```
0.6667 0.1667 0.1667  
0.1667 0.6667 0.1667  
0.1667 0.1667 0.6667
```

```
>> C*v1
```

```
ans =
```

```
1.0000  
1.0000  
1.0000
```

```
>> C*v2
```

```
ans =
```

```
0.5000  
0.5000  
-1.0000
```

```
>> C*v3
```

```
ans =
```

```
0.5000
```

-0.5000
0

3a)

```
>> t=linspace(0,pi,200);  
>> x=cos(t);  
>> y=sin(t);  
>> z=4*(sin(4*t)).^2;  
>> plot3(x,y,z)  
>>
```