

# Solution

- 1 Draw the surface of the sphere with the center  $[x_0 = 0, y_0 = 0, z_0 = 0]$  and the radius  $r = 1$ . Parametric expression of spherical surface is given by:

$$x = x_0 + r \cos\phi \sin\theta$$

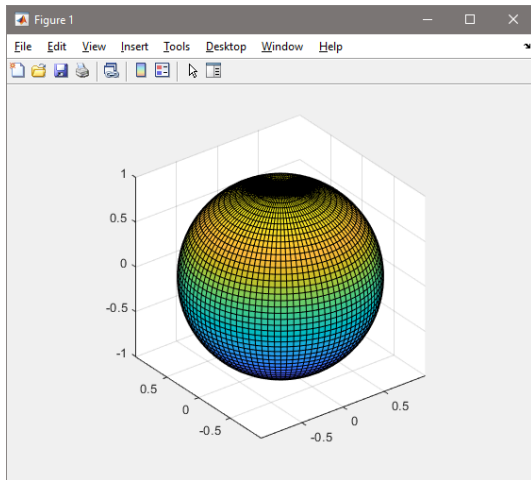
$$y = y_0 + r \sin\phi \sin\theta$$

$$z = z_0 + r \cos\theta$$

for  $0 < \phi \leq 2\pi$ ,  $0 \leq \theta \leq \pi$ .

```
>> N = 50;
>> theta = linspace(0,pi,N);
>> phi = linspace(0,2*pi,2*N);
>> [th, ph] = meshgrid(theta,phi);
>> R=1;
>> x0=0;
>> y0=0;
>> z0=0;
>> x=x0+R*sin(th).*cos(ph);
>> y=y0+R*sin(th).*sin(ph);
>> z=z0+R*cos(th);
>> surf(x,y,z);
>> axis equal
```

# Three-dimensional graphics



# Solution

- 2 in the same figure draw another sphere with the radius  $r = 2$  centred at

$$[x_0 = 1, y_0 = 1, z_0 = 1]$$

```
>> hold on
>> R=2;
>> x0=1;
>> y0=1;
>> z0=1;
>> x=x0+R*sin(th).*cos(ph);
>> y=y0+R*sin(th).*sin(ph);
>> z=z0+R*cos(th);
>> surf(x,y,z);
>> axis equal
>> shading interp
>> camlight
>> alpha(0.5)
```

# Three-dimensional graphics

