A.

```
% Transformation of vector into various coordinate system.
A=[3,2,4]; % Transform point.
[phi,rho,z]=cart2pol (3,2,4);%cartesian to cylindrical.
phiRad=(180/pi)*phi;
polar=[rho,phiRad,z]
% cartesian to spherical.
[phi,theta,r]=cart2sph(3,2,4);
theta=(pi/2)-theta;
thetaRad=(180/pi)*theta;
phiRad=(180/pi)*phi;
spherical=[phiRad,thetaRad,r]
%cylindrical to cartesian.
[x, y, z]=pol2cart (0.5880,3.605,4 )
%spherical to cartesian.
x=5.385* sind(42.03)* cosd(33.69)
y=5.385*sind(42.03)*sin(33.69)
z=5.385*cosd(42.03)
%spherical to cylindrical.
rho=sqrt(A(1)^2+A(2)^2)
phi=atand(A(2)/A(1))
z=z
%cylindrical to spherical
r=sqrt(A(1)^2+A(2)^2+A(3)^2)
theta=atand(sqrt(A(1)^2+A(2)^2)/A(3))
phi=atand(A(2)/A(1))
```

B.

```
% vector transformation.
% cylindrical cooridinates.
A=[3,2,4];
angle(1)=atand(A(2)/A(1))
rho=A(1)*cosd(33.69)+A(2)*sind(33.69)
phi=-A(1)*sind(33.69)+A(2)*cosd(33.69)
z=A(3)
% spherical coordinates
angle2=atand(sqrt(A(1)^2+A(2)^2)/A(3))
r=A(1)*sind(42.03)*cosd(33.69)+A(2)*sind(42.03)*sind(33.69)+A(3)*cosd(4
2.03)
theta=A(1)*cosd(42.03)*cosd(33.69)+A(2)*cosd(42.03)*sind(33.69)-
A(3)*sind(42.03)
phi=-A(1)*sind(33.69)+A(2)*cosd(33.69)
% cylndrical to cartesian
x=rho*cosd(33.69)-phi*sind(33.69)
y=rho*sind(33.69)+phi*cosd(33.69)
z=A(3)
% spherical to cartesian
x=r*sind(42.03)*cosd(33.69)-theta*cosd(42.03)*cosd(33.69)-
phi*sind(42.03)
```

```
y=r*sind(42.03)*sind(33.69)+theta*cosd(42.03)*sind(33.69)+phi*cosd(33.6
9)
z=r*cosd(42.03)-theta*sind(42.03)
%spherical to cyclinderical
rho=r*sind(42.03)+theta*cosd(42.03);
phi=theta
z=r*cosd(42.03)-theta*sind(42.03)
[rho,phi,z]

%cyclinderical to spherical
r=rho*sind(42.03)+z*cosd(42.03)
theta= rho*cosd(42.03)-z*sind(42.03)
phi=phi
[r,theta,phi]
```