c. **Determine the direction cosines to each of the principal stresses and calculate $\theta_{x'x}$, $\theta_{x'y}$, $\theta_{x'z}$, $\theta_{y'x}$, $\theta_{y'y}$, $\theta_{y'z}$, $\theta_{z'x}$, $\theta_{z'y}$, and $\theta_{z'z}$.**
Using MatLab

```
>> acos(V)*180/pi

ans =

  129.3450   90.0000   39.3450
   51.7807  126.8699   59.5231
   62.3541   36.8699   67.6420
```

$\theta_{x'x}$=129.3	**$\theta_{x'y}$=51.8**	**$\theta_{x'z}$=62.4**
$\theta_{y'x}$=90.0	**$\theta_{y'y}$=126.9**	**$\theta_{y'z}$=36.9**
$\theta_{z'x}$=39.3	**$\theta_{z'y}$=59.5**	**$\theta_{z'z}$=67.6**

d. Determine the transformation matrix from the original state of stress to the principal state of stress and prove that it is the transformation matrix by using it to transform the original state of stress.

```
>> T=V'

T =
```

-0.6340	**0.6187**	**0.4640**
0.0000	**-0.6000**	**0.8000**
0.7733	**0.5072**	**0.3804**

```
>> T*STRE*T'

ans =

  -20.9902   -0.0000   -0.0000
   -0.0000   20.0000    0.0000
    0.0000    0.0000   80.9902

>> P

P =

  -20.9902         0         0
         0   20.0000         0
         0         0   80.9902
```