

Help Homework LT 3b

Solving for a rotation of 180° about x axis followed by 180° about y axis. Finding the image of $(1,1,1)$.

Command Window

```
>> syms x y z
>> X=[1 0 0;0 cos(x) -sin(x); 0 sin(x) cos(x)]

X =

[ 1,      0,      0]
[ 0, cos(x), -sin(x)]
[ 0, sin(x),  cos(x)]

>> Y=[cos(y) 0 sin(y); 0 1 0; -sin(y) 0 cos(y)]

Y =

[ cos(y), 0, sin(y)]
[      0, 1,      0]
[-sin(y), 0, cos(y)]

>> Z=[cos(z) -sin(z) 0; sin(z) cos(z) 0;0 0 1]

Z =

[ cos(z), -sin(z), 0]
[ sin(z),  cos(z), 0]
[      0,      0, 1]

>> x=deg2rad(180);
```

```
>> x=deg2rad(180);
```

```
>> eval(X)
```

```
ans =
```

1.0000	0	0
0	-1.0000	-0.0000
0	0.0000	-1.0000

```
>> y=deg2rad(180);
```

```
>> eval(Y)
```

```
ans =
```

-1.0000	0	0.0000
0	1.0000	0
-0.0000	0	-1.0000

```
>> R=eval(Y*X)
```

```
R =
```

-1.0000	0.0000	-0.0000
0	-1.0000	-0.0000
-0.0000	-0.0000	1.0000

```
>> V=[1;1;1]
```

```
V =
```

1
1
1

```
>> R*V
```

```
ans =
```

-1.0000
-1.0000
1.0000