ROBOTICS LAB - 2

BL.EN.U4CSE23239

```
q = UnitQuaternion(rpy2tr(0.1,0.2,0.3))
```

```
q =

0.98335 < 0.034271, 0.10602, 0.14357 >
```

```
q1 = inv(q)
```

```
q1 =

0.98335 < -0.034271, -0.10602, -0.14357 >
```

```
q*q1
```

```
ans =

1 < 0, 0, 0 >
```

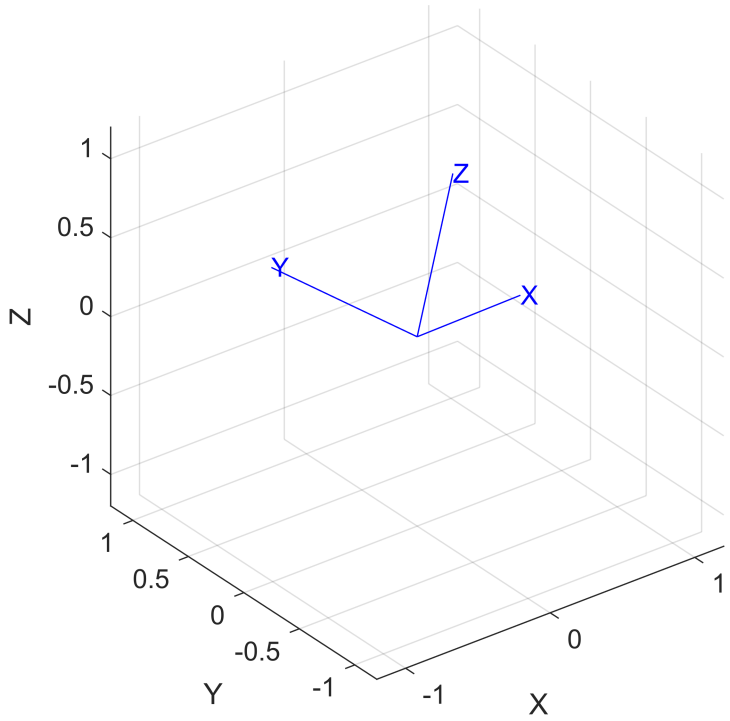
```
q/q
```

```
ans =

1 < 0, 0, 0 >
```

```
q.R()
```

```
ans = 3×3
    0.9363   -0.2751    0.2184
    0.2896    0.9564   -0.0370
   -0.1987    0.0978    0.9752
```

```
clf;
axis([-4 4 -4 4 -4 4]);
view(3);
q.plot()
```




```
Rx = rotx(90,'deg')
```

```
Rx = 3×3
     1     0     0
     0     0    -1
     0     1     0
```

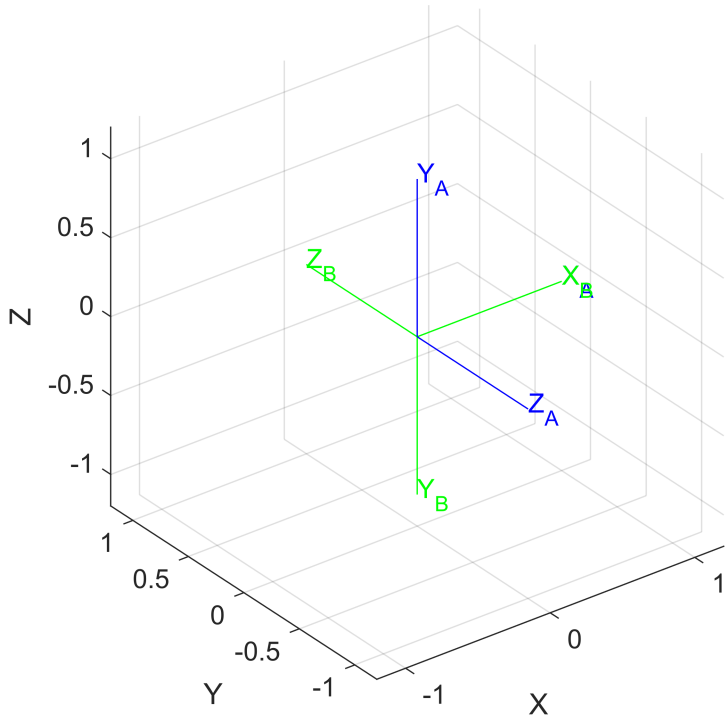
```
q = UnitQuaternion(Rx)
```

```
q =

0.70711 < 0.70711, 0, 0 >
```

```
q.plot('frame','A')
q1 = inv(q)
```

```
q1 =

0.70711 < -0.70711, 0, 0 >
```

```
hold on
q1.plot('frame','B','color','g')
```




```
q.angle(q1)
```

```
ans = 1.5708
```

1)

```
A = UnitQuaternion(rotx(45,"deg")*roty(60,"deg"))
```

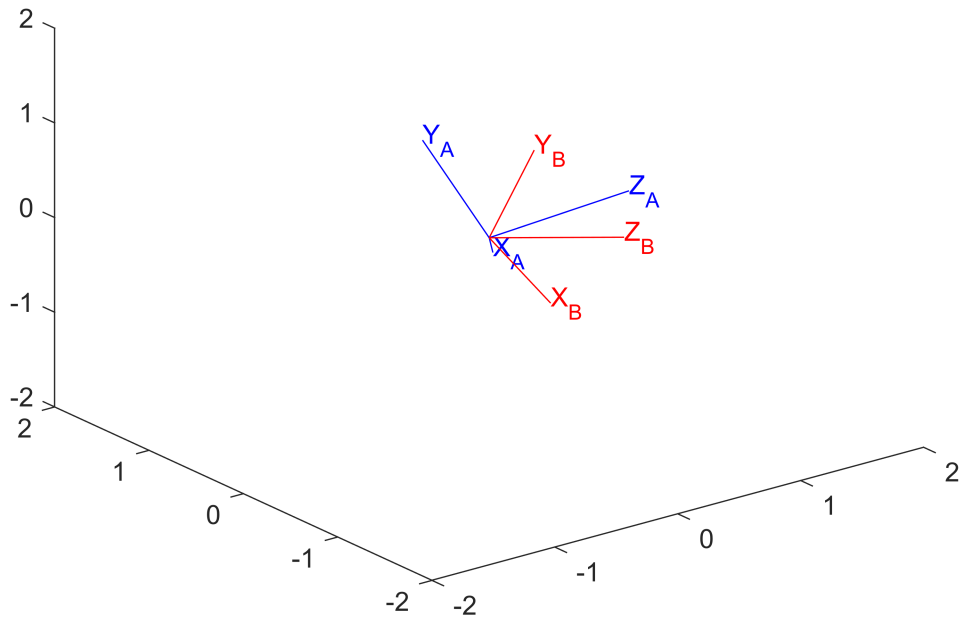
```
A =

0.8001 < 0.33141, 0.46194, 0.19134 >
```

```
B = UnitQuaternion(roty(60,'deg')*rotx(60,"deg"))
```

```
B =

0.75 < 0.43301, 0.43301, -0.25 >
```

```
clf;
axis([-2 2 -2 2 -2 2]);
view(3);
hold on
A.plot('frame','A')
```

```
B.plot('frame','B','color','r')
```



2)

```
A = UnitQuaternion(rotz(30,"deg")*rotx(80,"deg")*roty(126,"deg"))
```

```
A =

0.18769 < 0.10522, 0.73482, 0.64322 >
```

```
B = UnitQuaternion(roty(126,'deg')*rotx(80,"deg")*rotz(30,"deg"))
```

```
B =

0.48416 < 0.45853, 0.58376, -0.4632 >
```

```
clf;
axis([-2 2 -2 2 -2 2]);
view(3);
hold on
A.plot('frame','A')
```

```
B.plot('frame','B','color','r')
```