

```
clear
clc
rot2(0)
```

```
ans = 2×2
    1    0
    0    1
```

```
R = rot2(30, 'deg')
```

```
R = 2×2
    0.8660   -0.5000
    0.5000    0.8660
```

```
c1 = R(:,1)
```

```
c1 = 2×1
    0.8660
    0.5000
```

```
c2 = R(:,2)
```

```
c2 = 2×1
   -0.5000
    0.8660
```

```
dot(c1, c2)
```

```
ans = 0
```

```
det(R)
```

```
ans = 1
```

```
%trplot2(R)
axis equal
```

```
transl2(1,2)
```

```
ans = 3×3
    1    0    1
    0    1    2
    0    0    1
```

```
trot2(30, 'deg')
```

```
ans = 3×3
    0.8660   -0.5000    0
    0.5000    0.8660    0
    0         0      1.0000
```

```
transl2(1,2) * trot2(30, 'deg')
```

```
ans = 3x3
    0.8660    -0.5000    1.0000
    0.5000     0.8660    2.0000
         0         0    1.0000
```

```
SE2(1, 2, 30, 'deg') %same as line above
```

```
ans =
    0.8660    -0.5000     1
    0.5000     0.8660     2
         0         0     1
```

```
axis([0 5 0 5]) %x from 0 to 5 and y from 0 to 5
axis square
hold on
T1 = SE2(1, 2, 30, 'deg')
```

```
T1 =
    0.8660    -0.5000     1
    0.5000     0.8660     2
         0         0     1
```

```
trplot(T1, 'frame', '1', 'color', 'b')
T2 = SE2(2, 1, 0)
```

```
T2 =
     1     0     2
     0     1     1
     0     0     1
```

```
trplot(T2, 'frame', '2', 'color', 'r')
T3 = T1*T2
```

```
T3 =
    0.8660    -0.5000    2.232
    0.5000     0.8660    3.866
         0         0     1
```

```
trplot(T3, 'frame', '3', 'color', 'g')
T4 = T2*T1 %different order than T3
```

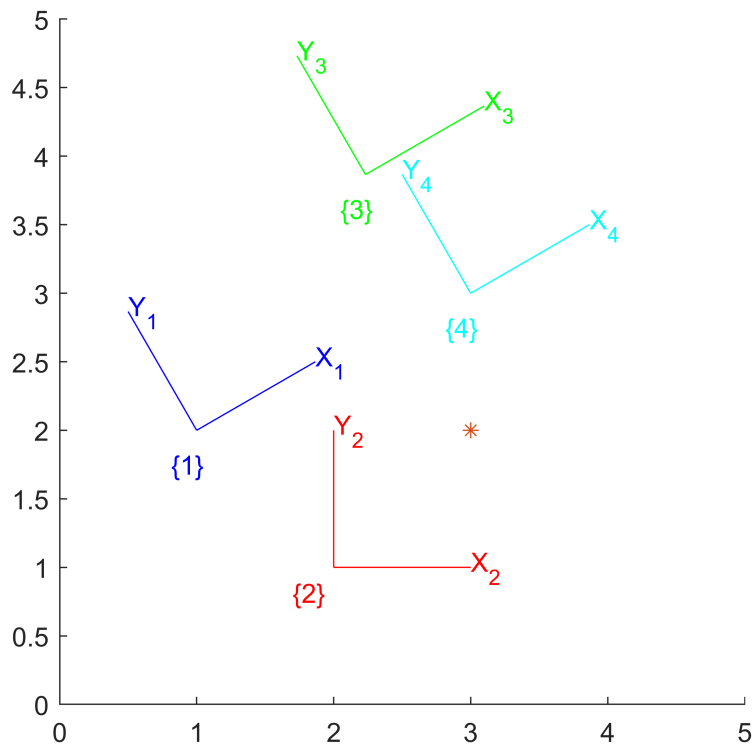
```
T4 =
    0.8660    -0.5000     3
    0.5000     0.8660     3
         0         0     1
```

```
trplot(T4, 'frame', '4', 'color', 'c')
```

```
P = [3 2]'
```

```
P = 2×1  
     3  
     2
```

```
plot_point(P, '*')
```



```
P1 = double(inv(T1)) * [P;1] %P wrt frame 1
```

```
P1 = 3×1  
     1.7321  
    -1.0000  
     1.0000
```