

# Creating a rotation matrix in NumPy

One way to create the two dimensional rotation matrix,

$$\mathbf{R} = \begin{pmatrix} \cos\theta & -\sin\theta \\ \sin\theta & \cos\theta \end{pmatrix}$$

which rotates points in the  $xy$  plane anti-clockwise through  $\theta = 30^\circ$  about the origin:

```
In [x]: theta = np.radians(30)
In [x]: c, s = np.cos(theta), np.sin(theta)
In [x]: R = np.matrix('{} {}; {}'.format(c, -s, s, c))
In [x]: print(R)
[[ 0.8660254 -0.5      ]
 [ 0.5       0.8660254]]
```

Of course, in this case it would be easier to simply pass a `list of lists` directly:

```
In [x]: R = np.matrix([[c, -s], [s, c]])
```