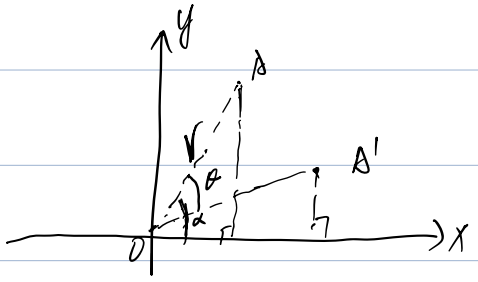
# 二维围绕原点旋转推导（顺时针）




$$A:\{x,y\} \Rightarrow A':\{x',y'\}$$

$$\begin{cases} x' = r\cdot\cos(\alpha-\theta) \\ y' = r\cdot\sin(\alpha-\theta) \end{cases}$$

$$\Rightarrow \begin{cases} x' = r(\cos\alpha\cos\theta+\sin\theta\sin\alpha) \\ y' = r(\sin\alpha\cos\theta-\cos\alpha\sin\theta) \end{cases}$$

$$\Rightarrow \begin{cases} x' = \cos\theta\cdot x + y\cdot\sin\theta \\ y' = -x\cdot\sin\theta + y\cdot\cos\theta \end{cases}$$

$$\Rightarrow \begin{pmatrix} \cos\theta & \sin\theta \\ -\sin\theta & \cos\theta \end{pmatrix}\begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} x' \\ y' \end{pmatrix}$$