$$x_1' = sRx_1 + t \qquad t = x'_{1(2)} - sRx_{1(2)}$$

$$x_2' = sRx_2 + t$$

$$(x_2' - x_1') = sR(x_2 - x_1)$$

$$v' = sRv \quad , \quad \|Rv\| = \|v\| \; , \; R\text{ - rotation}$$

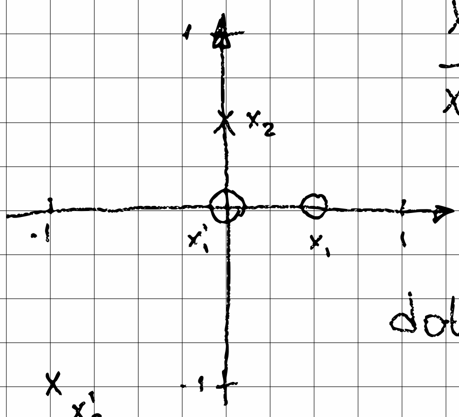
s - scalar

$$\Rightarrow \quad \|v'\| = s\|v\| \quad , \quad s = \frac{\|v'\|}{\|v\|}$$

$$\text{angle} = \frac{v'}{\|v'\|} \text{ dot } \frac{v}{\|v\|} \leftarrow \text{arccos}$$

$$\vec{x} = ([0 \;\; \tfrac{1}{2}] - [\tfrac{1}{2} \;\; 0]) = [-\tfrac{1}{2} \;\; \tfrac{1}{2}]$$

$$\vec{x}' = ([-1 \;\; -1] - [0 \;\; 0]) = [-1 \;\; -1]$$



$$\frac{\|\vec{x}'\|}{\|x\|} = 2$$

$\text{dot}(\vec{x}, \vec{x}') = 0$, rotation angle $\pi/2$

$$t = \begin{bmatrix} 0 \\ 0 \end{bmatrix} - 2 \cdot \begin{bmatrix} \cos(\pi/2) & -\sin(\pi/2) \\ \sin(\pi/2) & \cos(\pi/2) \end{bmatrix} \cdot \begin{bmatrix} 0 \\ 1/2 \end{bmatrix} = \begin{bmatrix} 0 \\ -1 \end{bmatrix}$$