

داستان چهارم:  
تبدیلات هندسی

2	6
20	0

2	2	6	6
3	2	6	6
20	20	0	0
20	20	0	0

2	6
20	0

2	3	5	6
8			6
12			0
20	13	6	0

$$\begin{bmatrix} x' \\ y' \end{bmatrix} =$$

$$\underbrace{\begin{bmatrix} x' \\ y' \end{bmatrix}} = \underbrace{\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}}_{\text{سکیل}} \underbrace{\begin{bmatrix} x \\ y \end{bmatrix}} \quad \begin{bmatrix} +4 & 0 \\ 0 & -1 \end{bmatrix}$$

$$\begin{bmatrix} \underline{2} & 0 \\ 0 & \underline{2} \end{bmatrix}$$

$$\begin{bmatrix} -1 & 0 \\ 0 & 1 \end{bmatrix}$$

$$\begin{bmatrix} -1 & 0 \\ 0 & -1 \end{bmatrix}$$
$$\begin{bmatrix} 1 & 0 \\ 0 & -1 \end{bmatrix}$$
$$\begin{bmatrix} -1 & 0 \\ 0 & 1 \end{bmatrix}$$

Scale

$$S_n$$
$$\begin{bmatrix} S_x & . \\ . & S_y \end{bmatrix}$$

6 < < |

$$\begin{bmatrix} x' \\ y' \\ 1 \end{bmatrix} = \begin{bmatrix} 1 & 0 & t_x \\ 0 & 1 & t_y \\ 0 & 0 & 1 \end{bmatrix} \times \begin{bmatrix} x \\ y \\ 1 \end{bmatrix}$$

$$\begin{bmatrix} m_x & 0 & 0 \\ 0 & m_y & 0 \\ 0 & 0 & 1 \end{bmatrix} \quad \text{Scale} \quad m_x = -1$$

$$\begin{bmatrix} S_x & 0 & 0 \\ 0 & S_y & 0 \\ 0 & 0 & 1 \end{bmatrix} \quad \text{Scale}$$

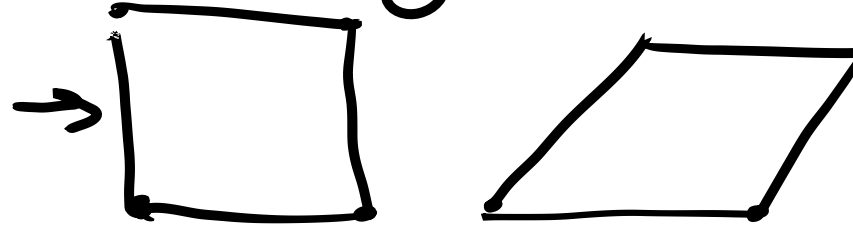
$$\begin{bmatrix} 1 & 0 & t_x \\ 0 & 1 & t_y \\ 0 & 0 & 1 \end{bmatrix} \quad \text{translate}$$

$$\begin{bmatrix} \cos \theta & -\sin \theta & 0 \\ \sin \theta & \cos \theta & 0 \\ 0 & 0 & 1 \end{bmatrix} \quad \text{Rotation}$$



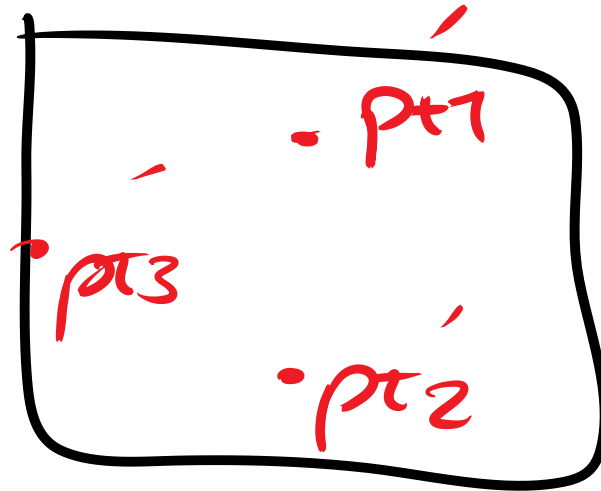
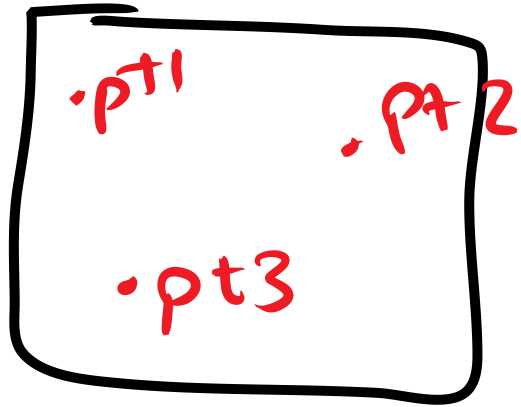
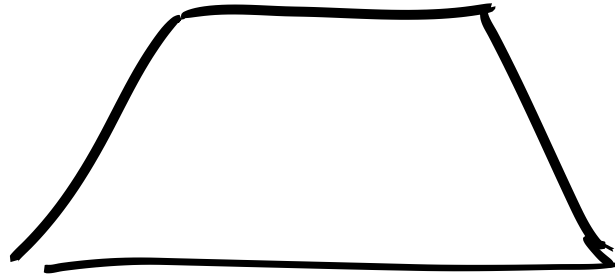
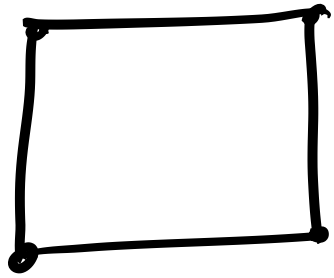
$$\begin{bmatrix} 1 & s_x & \cdot \\ s_y & 1 & \cdot \\ \cdot & \cdot & 1 \end{bmatrix}$$

Shearing



و

Scale \* Rotate \* Mirror \* Translate



# Perspective



حاصل ضرب

