

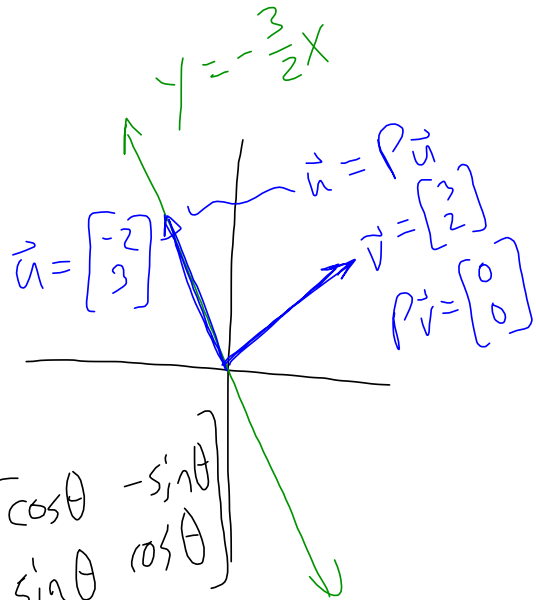
$$\begin{bmatrix} a & b \\ c & d \end{bmatrix} \begin{bmatrix} 1 \\ 0 \end{bmatrix} = \begin{bmatrix} \cos \theta \\ \sin \theta \end{bmatrix}$$

$$\begin{bmatrix} a \\ c \end{bmatrix} = \begin{bmatrix} \cos \theta \\ \sin \theta \end{bmatrix}$$

$$\begin{bmatrix} a & b \\ c & d \end{bmatrix} \begin{bmatrix} 0 \\ 1 \end{bmatrix} = \begin{bmatrix} -\sin \theta \\ \cos \theta \end{bmatrix}$$

$$\begin{bmatrix} b \\ d \end{bmatrix} = \begin{bmatrix} \sin \theta \\ \cos \theta \end{bmatrix}$$

$$R_\theta = \begin{bmatrix} \cos \theta & -\sin \theta \\ \sin \theta & \cos \theta \end{bmatrix}$$



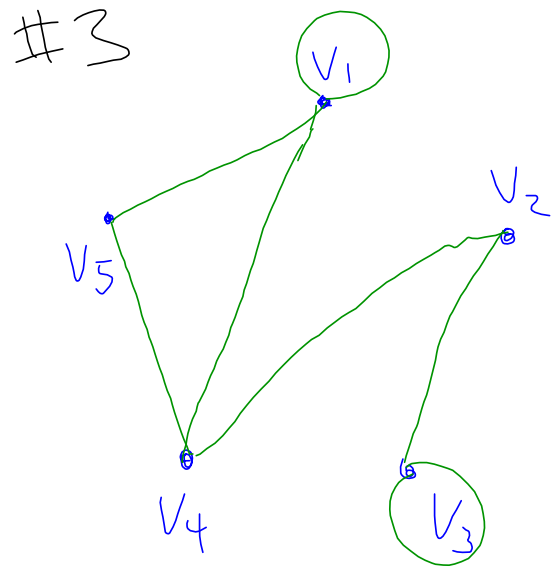
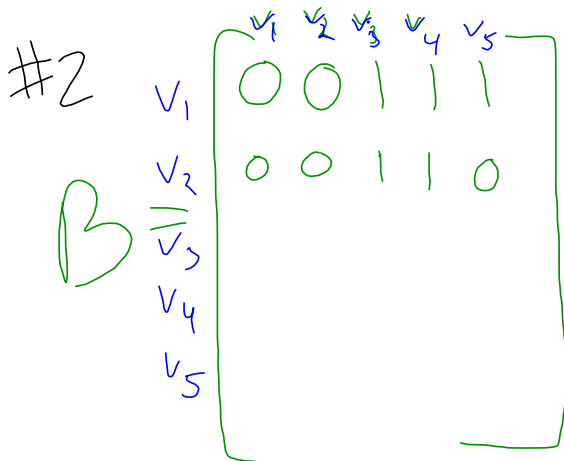
$$x = -4 + 2t \quad (?)$$

$$y = t$$

$$\begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} -4 \\ 0 \end{bmatrix} + t \begin{bmatrix} 2 \\ 1 \end{bmatrix}$$

$$A\vec{x} = \vec{0}$$

$$\begin{bmatrix} 6 \\ -5 \end{bmatrix} = \begin{bmatrix} -4 \\ 0 \end{bmatrix} + t \begin{bmatrix} 2 \\ 1 \end{bmatrix}$$



#5

$v_1 v_4 v_2 v_3$

$v_1 v_3 v_3 v_3$

$v_1 v_3 v_4 v_3$

$v_1 v_3 v_2 v_3$

$v_1 v_3 v_1 v_3$

$v_1 v_5 v_1 v_3$

#6

v_1 to v_2

$v_2 v_4 v_2$

$v_1 v_3 v_2$

$$B = \begin{bmatrix} 0 & 0 & 1 & 1 & 1 \\ 0 & 0 & 1 & 1 & 0 \\ 1 & 1 & 1 & 1 & 0 \\ 1 & 1 & 1 & 0 & 0 \\ 1 & 0 & 0 & 0 & 1 \end{bmatrix}$$

$$B^2 = \begin{bmatrix} 3 & 2 & 2 & 1 & 1 \\ 2 & 2 & 2 & 1 & 0 \\ 2 & 2 & 4 & 3 & 1 \\ 1 & 1 & 3 & 3 & 1 \\ 1 & 0 & 1 & 1 & 2 \end{bmatrix}$$

v_3 to v_3

$v_3 v_3 v_3$

$v_3 v_2 v_3$

$v_3 v_4 v_3$

$v_3 v_1 v_3$