## **Orthogonality**

If  $\vec{u}\cdot\vec{v}=0$ , then  $\vec{u},\vec{v}$  are Orthogonal If 2 vectors are orthogonal, then  $||\vec{u}+\vec{v}||^2=||\vec{u}||^2+||\vec{v}||^2$ 

Find the vector orthogonal to  $\begin{bmatrix} 1 \\ 2 \end{bmatrix}$ .

$$egin{bmatrix} 1 \ 2 \end{bmatrix}^\perp = egin{bmatrix} 2 \ -1 \end{bmatrix}$$

Proof,

$$ec{u}\cdotec{v}=egin{bmatrix}2\-1\end{bmatrix}\cdotegin{bmatrix}1\2\end{bmatrix}^{ot}=0$$