Assignment 2

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Q15(a) :If $\vec{a}$ and $\vec{b}$ are perpendicular vectors, $|\vec{a}+\vec{b}| = 13$ and $|\vec{a}| = 5$ and find the value of $|\vec{b}|$.

Solution:Given,$\vec{a}$ and $\vec{b}$ are perpendicular vectors hence, $\vec{a}\cdot\vec{b} = 0$ Also ,$|\vec{a}+\vec{b}| = 13$ and $|\vec{a}| = 5$.

$|\vec{a}+\vec{b}| = 13$
$|\vec{a}+\vec{b}|^2 = 169$
$|\vec{a}|^2 + |\vec{b}|^2 + 2\vec{a}\cdot\vec{b} = 169$
$|\vec{b}|^2 = 169 - 5^2 - 2\times 0$
$\therefore |\vec{b}| = 12.$