Formula for $a_{\vec{N}}$

Area of parallelogram $= \|\vec{v} \times \vec{a}\|$

Area of parallelogram $=$ base $\times$ height

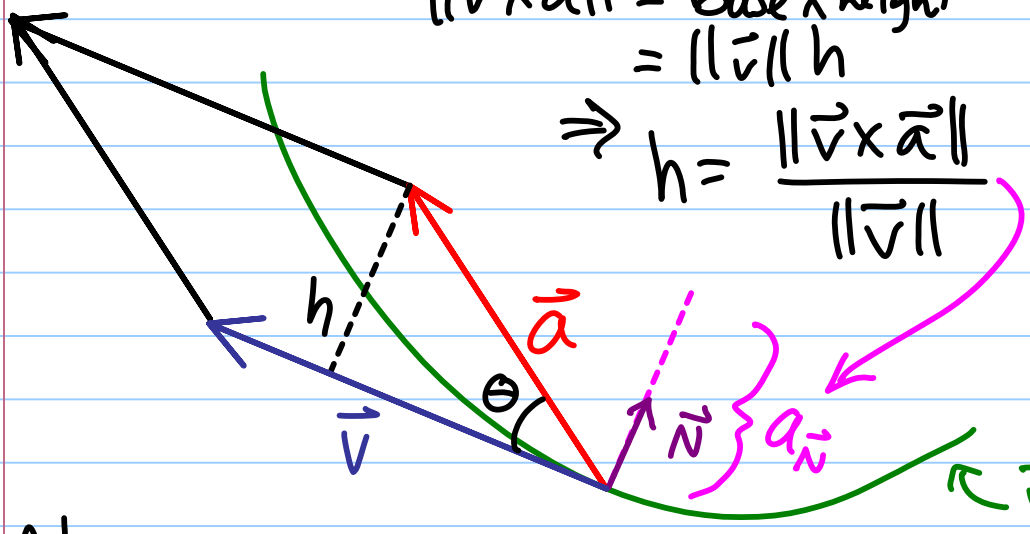
$\|\vec{v} \times \vec{a}\| =$ base $\times$ height

$= \|\vec{v}\| h$

$\Rightarrow h = \dfrac{\|\vec{v} \times \vec{a}\|}{\|\vec{v}\|}$

base $= \|\vec{v}\|$

height $= h$



Thanks, Dawn!

Also, Let $\theta =$ angle between $\vec{v}$ and $\vec{a}$.

$\|\vec{v} \times \vec{a}\| = \|\vec{v}\| \|\vec{a}\| \sin\theta$

$\dfrac{\|\vec{v} \times \vec{a}\|}{\|\vec{v}\|} = \|\vec{a}\| \sin\theta$ but $\sin\theta = \dfrac{\text{opp}}{\text{hyp}}$

$= \|\vec{a}\| \dfrac{h}{\|\vec{a}\|} = h$ $= \dfrac{h}{\|\vec{a}\|}$

(11)!

AB 9/29/03