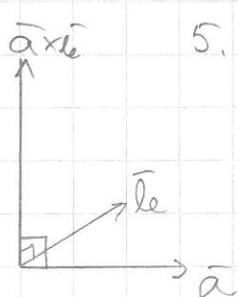


TI-magne: MENU $\rightarrow$ 7. Matriin ja vektorin $\rightarrow$ C: Vektorin
 $\rightarrow$ crossP([1,1,1], [2,-1,3])
 $\Rightarrow$ [4 -1 -3]

b) $|\vec{a} \times \vec{b}| = \sqrt{4^2 + (-1)^2 + (-3)^2} = \sqrt{26}$

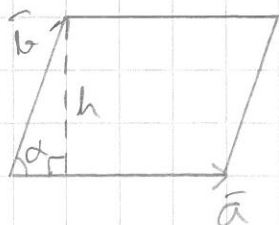
$\Rightarrow \pm \frac{\vec{a} \times \vec{b}}{|\vec{a} \times \vec{b}|} = \pm \frac{1}{\sqrt{26}} (4\hat{i} - \hat{j} - 3\hat{k})$



5. Pistitöiden sovelluksia

$|\vec{a} \times \vec{b}| = |\vec{a}| |\vec{b}| \sin(\alpha, \vec{b})$

Geometrisen tuloksen:



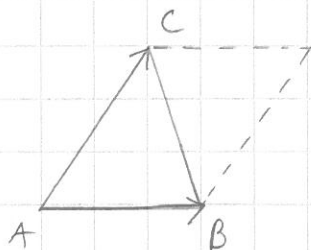
$\sin \alpha = \frac{h}{|\vec{b}|} \quad (\Rightarrow) \quad h = |\vec{b}| \sin \alpha$

$A = |\vec{a}| h = |\vec{a}| |\vec{b}| \sin \alpha = |\vec{a} \times \vec{b}|$

$\Rightarrow$ $A = |\vec{a} \times \vec{b}|$ SUUNNIKKAAN PINTA-ALA

$A = (3, -1, 2), B = (1, 2, -2), C = (-1, 3, 2)$

5.14



$\vec{AB} = -2\hat{i} + 3\hat{j} - 4\hat{k}$

$\vec{AC} = -4\hat{i} + 4\hat{j}$

$\vec{AB} \times \vec{AC} = \begin{vmatrix} \hat{i} & \hat{j} & \hat{k} \\ -2 & 3 & -4 \\ -4 & 4 & 0 \end{vmatrix} = 16\hat{i} + 16\hat{j} + 4\hat{k}$

Kolmion pinta-ala: $A_2 = \frac{1}{2} A_n = \frac{1}{2} |\vec{AB} \times \vec{AC}| = \frac{1}{2} \sqrt{16^2 + 16^2 + 4^2}$

$= \frac{1}{2} \sqrt{528} = \frac{1}{2} \sqrt{16 \cdot 33} = \frac{1}{2} \cdot 4 \sqrt{33} = \underline{\underline{2\sqrt{33}}}$