#3) Given $\vec{u}\ \langle 2,1,-4\rangle$ $\vec{v}\ \langle 1,0,2\rangle$ $\vec{w}\ \langle 3,1,-1\rangle$
find the following: (3 pts each)

A) $3\vec{v}$ $3\langle 1,0,2\rangle = \langle 3,0,6\rangle$

B) $\vec{u}+\vec{v}-\vec{w}$ $\langle 2,1,-4\rangle + \langle 1,0,2\rangle = \langle 3,1,-2\rangle - \langle 3,1,-1\rangle$
$\boxed{\langle 0,0,-1\rangle}$

C) $\vec{u}\cdot\vec{w}$ $\langle 2,1,-4\rangle \cdot \langle 3,1,-1\rangle$
$2\cdot 3 + 1\cdot 1 + 4$
$6+1+4 = \boxed{11}$

D) normalize $\vec{v}$ $\dfrac{\langle 1,0,2\rangle}{\sqrt{1+4}}$ $\boxed{\langle \frac{1}{\sqrt{5}}, 0, \frac{2}{\sqrt{5}}\rangle}$
$1^2+0^2+2^2$

E) $\vec{u}\times\vec{v}$ $\begin{vmatrix} i & j & k \\ 2 & 1 & -4 \\ 1 & 0 & 2 \end{vmatrix}$ $[(1\cdot 2)-(-4\cdot 0)]-[(2\cdot 2)-(-4\cdot 1)]+$
$2-0 \quad -\quad 4+4$
$\boxed{\langle 2, -8, -1\rangle}$

$[2\ 0-1\ 1]$
$0-1$