Bài 4

a/ $v = (2, -1, 2)$

$\|v\| = \sqrt{2^2 + (-1)^2 + 2^2} = \sqrt{9} = 3$

b/ $v = 2(1, 1, -1) = (2, 2, -2)$

$= \sqrt{2^2 + 2^2 + 2^2} = 2\sqrt{3}$

c/ $v = -3(1, 1, 2)$

$= \sqrt{9 + 9 + 36} = \sqrt{54} \approx 7.35$

d/

$v = (1, 2, 3) - (4, 1, 2)$

$= \sqrt{9 + 1 + 1} = \sqrt{11}$

Bài 5: $A = (3, -1, 4)$, $B = (1, 3, 5)$

$\vec{a} = (1 - 3; 4; 1)$

$= (-2, 4, 1)$

$\|\vec{a}\| = \sqrt{4 + 16 + 1} = \sqrt{21}$

$\vec{u} = \frac{1}{\sqrt{21}} \cdot (-2, 4, 1) = \left(\frac{-2}{\sqrt{21}}, \frac{4}{\sqrt{21}}, \frac{1}{\sqrt{21}}\right)$

Bài 6:

$A = \|\vec{v} - 3\vec{w}\| = ?$ $\quad \|\vec{v}\| = 2$

$\|\vec{w}\| = 1$

$\vec{v} \cdot \vec{w} = 2$

$A^2 = \|\vec{v} - 3\vec{w}\|^2$

$A^2 = (\vec{v} - 3\vec{w})(\vec{v} - 3\vec{w})$

$A^2 = \vec{v} \cdot \vec{v} - 6\vec{v} \cdot \vec{w} + 9\vec{w} \cdot \vec{w}$

$A^2 = \|v\|^2 - 6 \cdot 2 + 9 \cdot 1$

$A^2 = 4 - 12 + 9 = 1$

$\Rightarrow A = \sqrt{1} = 1$