연습문제 8.1 Part 3. 2

① $u=\begin{bmatrix}1\\0\end{bmatrix}$, $v=\begin{bmatrix}1\\1\end{bmatrix}$ (1) 1

② $u=\begin{bmatrix}0\\0\end{bmatrix}$, $v=\begin{bmatrix}1\\-1\end{bmatrix}$ (2) $=\sqrt{2}$

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$u=\begin{bmatrix}2\\3\\2\end{bmatrix}$, $v=\begin{bmatrix}4\\2\\-1\end{bmatrix}$ $u\cdot v = 2\cdot4+3\cdot2+2\cdot(-1)=12$.

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$u=\begin{bmatrix}1\\0\\0\\1\end{bmatrix}$, $v=\begin{bmatrix}0\\2\\3\\0\end{bmatrix}$ $u\cdot v$가 0이므로 90°이므로 u와 v는 직교한다.

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$w=\begin{bmatrix}2x\\1\\3y\end{bmatrix}$, $u=\begin{bmatrix}2\\0\\1\end{bmatrix}$, $v=\begin{bmatrix}-1\\1\\2\end{bmatrix}$ $4x+3y=0$, $-2x+1+6y=0$ 이므로

$x=\frac{1}{10}$, $y=-\frac{2}{15}$

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$u=\begin{bmatrix}1\\3\\-5\\4\end{bmatrix}$, $v=\begin{bmatrix}2\\-3\\4\\1\end{bmatrix}$ $u\cdot v = 2-9-20+4=-23$

$\|u\|^2 = 1+9+25+16=51$

$\|v\|^2 = 4+9+16+1=30$

$\cos\theta = \frac{-23}{\sqrt{51}\sqrt{30}} = \frac{-23}{3\sqrt{170}}$; $u\cdot v$ 값이 음수이므로 둔각.

연습문제 8.2 Part 3. 2

~~$u=2i+5j+$~~

$u=i-2j+k$, $v=2i-j-k$

(1) $u\times v$, ③ $v\times u$.

(1) $= 5i+7j+3k$

(2) $= -5i-7j-3k$

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$2i-j+k$, $i+3j-k$ $\sqrt{62}$

6

$(-1,2)$, $(3,-1)$, $(4,3)$ $\frac{19}{2}$

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(1) $u=(1,2,-3)$, $v=(3,4,-1)$, $w=(2,-1,5)$ $= (1) = 16$

(2) $u=(1,1,3)$, $v=(1,-2,-4)$, $w=(4,1,5)$ $= (2) = 0$