Subject: Session 7 Problems

Year. Month. Date. ( )

1 a) $\begin{vmatrix} i & j & k \\ 1 & 3 & 1 \\ 2 & -1 & 5 \end{vmatrix} = i\begin{vmatrix} 3 & 1 \\ -1 & 5 \end{vmatrix} - j\begin{vmatrix} 1 & 1 \\ 2 & 5 \end{vmatrix} + k\begin{vmatrix} 1 & 3 \\ 2 & -1 \end{vmatrix} = 16i - 3j + 7k$

b) $(i+2j) \times (2i-3j)$

$= \begin{vmatrix} i & j & k \\ 1 & 2 & 0 \\ 2 & -3 & 0 \end{vmatrix} = k\begin{vmatrix} 1 & 2 \\ 2 & -3 \end{vmatrix} + 0 + 0$

$= 0i + 0j + -7k$

2) $\begin{vmatrix} i & j & k \\ 2 & -1 & 5 \\ 1 & 3 & 1 \end{vmatrix} = i\begin{vmatrix} -1 & 5 \\ 3 & 1 \end{vmatrix} - j\begin{vmatrix} 2 & 5 \\ 1 & 1 \end{vmatrix} + k\begin{vmatrix} 2 & -1 \\ 1 & 3 \end{vmatrix}$

$= -16i - 3j + 7k$

$\Rightarrow \sqrt{16^2 + 3^2 + 7^2} = \sqrt{314}$