1C. Determinants

2a)

$$\begin{vmatrix} -1 & 0 & 4 \\ 1 & 2 & 2 \\ 3 & -2 & -1 \end{vmatrix} = -\begin{vmatrix} 2 & 2 \\ -2 & -1 \end{vmatrix} + 4\begin{vmatrix} 1 & 2 \\ 3 & -2 \end{vmatrix} = -2 - 30 = \boxed{-32}$$

2b)

$$\begin{vmatrix} -1 & 0 & 4 \\ 1 & 2 & 2 \\ 3 & -2 & -1 \end{vmatrix} = -\begin{vmatrix} 2 & 2 \\ -2 & -1 \end{vmatrix} - \begin{vmatrix} 0 & 4 \\ -2 & -1 \end{vmatrix} + 3\begin{vmatrix} 0 & 4 \\ 2 & 2 \end{vmatrix} = -2 - 8 - 24 = \boxed{-32}$$

5a)

redundant proof