Question 13: Let

$$\begin{vmatrix} 6i & -3i & 1 \\ 4 & 3i & -1 \\ 20 & 3 & i \end{vmatrix} = x + iy,$$

then

A) x = 3, y = 1

B) x = 0, y = 0

C) x = 0, y = 3

D) x = 1, y = 3

Solution:

$$(a+b+c)^2 \begin{vmatrix} 2bc & -2c & -2b \\ b^2 & c+a-b & 0 \\ c^2 & 0 & a+b-c \end{vmatrix}$$

=> [6i(-3 + 3) + 3i(4i + 20) + 1(12 − 60i) = x + iy

⇒ $(C_1 \rightarrow C_1 + C_2 + C_3)$

⇒ x = 0, y = 0