

ACMA 2006

$$\begin{aligned} \text{c)} \quad 3x - y + 4z &= 21 \\ 5x + 3y - z &= 15 \\ 2x + 4y + 3z &= 10 \end{aligned}$$

$$\begin{pmatrix} 3 & -1 & 4 \\ 5 & 3 & -1 \\ 2 & 4 & 3 \end{pmatrix} \begin{pmatrix} x \\ y \\ z \end{pmatrix} = \begin{pmatrix} 21 \\ 15 \\ 10 \end{pmatrix}$$

$$\star |A| = 3(9 + 4) + 1(15 + 2) + 4(20 - 6)$$

$$|A| = 33 + 17 + 56 + 39$$

$$|A| = 112$$

$$A_1 = \begin{pmatrix} 21 & -1 & 4 \\ 15 & 3 & -1 \\ 10 & 4 & 3 \end{pmatrix}$$

$$|A_1| = 21(9 + 4) + 1(45 + 10) + 4(60 - 30)$$

$$|A_1| = 273 + 55 + 120$$

$$|A_1| = 448$$

$$A_2 = \begin{pmatrix} 3 & 21 & 4 \\ 5 & 15 & -1 \\ 2 & 10 & 3 \end{pmatrix}$$

$$|A_2| = 3(45 + 10) - 21(15 + 2) + 4(50 - 30)$$

$$|A_2| = 165 - 357 + 80$$

$$|A_2| = -112$$

$$A_3 = \begin{pmatrix} 3 & -1 & 21 \\ 5 & 3 & 15 \\ 2 & 4 & 10 \end{pmatrix}$$

$$|A_3| = 3(30 - 60) + 1(50 - 30) + 21(20 - 6)$$

$$|A_3| = -90 + 20 + 294$$

$$|A_3| = 224$$