

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

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

$$|A_3| = 3(-30) - 1(20) + 21(14)$$

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

$$|A_3| = 184$$

$$x = \frac{5190}{58}$$

$$y = \frac{-88}{58}$$

$$z = \frac{184}{58}$$

$$x = 3.28$$

$$y = -1.52$$

$$z = 3.17$$

Question 2 Complex numbers

a)

i) $(2+5j) + (-5-2j)$

$$-3+3j$$

ii) $(2+5j) - (-5-2j)$

$$7+7j$$

iii) $\frac{2+5j}{1-3j} \times \frac{1+3j}{1+3j}$

$$\frac{(2+5j)(1+3j)}{(1-3j)(1+3j)}$$

$$\frac{2+6j+5j+15j^2}{1+3j-3j-9j^2}$$

$$\frac{2+11j-15}{1+9}$$

$$\frac{-13+11j}{10}$$

$$\frac{-13}{10} + \frac{11}{10}j$$