

Adam Evans 200595911/12/20

Question 2

$$a) i) Z_1 + Z_3 = (2 + 5j) + (1 - 3j) = \boxed{3 + 2j}$$

$$ii) Z_1 - Z_3 = (2 + 5j) - (-5 - 2j) = \boxed{-3 + 7j}$$

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

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

$$\frac{2 + 5j + 6j + 8j^2}{1 + 3j - 3j - 6j^2}$$

$$\frac{2 + 11j - 8}{1 + 6}$$

$$\frac{-6 + 11j}{7} = \boxed{\frac{-6}{7} + \frac{11j}{7}}$$