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Matthew Jones 2004732

Analytical Methods Test 2

Question 2

a) $z_1 = 3 + 7j$ $z_2 = 2 - 10j$ $z_3 = -4 - j$

i) $z_1 + z_3$
 $(3 + 7j) + (-4 - j)$
 $3 + 7j - 4 - j$
 $-1 + 6j$

ii) $z_1 - z_3$
 $(3 + 7j) - (-4 - j)$
 $3 + 7j + 4 + j$
 $7 + 8j$

iii) $\frac{z_1}{z_2}$
 $\frac{3 + 7j}{2 - 10j} \times \frac{2 + 10j}{2 + 10j}$
 $\frac{(3 + 7j)(2 + 10j)}{(2 - 10j)(2 + 10j)}$

FOIL

$$\frac{6 + 30j + 14j + 70j^2}{4 + 20j - 20j - 100j^2}$$

$$\frac{6 + 44j - 70}{4 + 100}$$

$$\frac{-64 + 44j}{104}$$

$$\frac{-64}{104} + \frac{44}{104}j$$