

1.A \mathbb{R}^n and \mathbb{C}^n

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Exercise 1.A.11. Explain why there does not exist $\lambda \in \mathbb{C}$ such that

$$\lambda(2 - 3i, 5 + 4i, -6 + 7i) = (12 - 5i, 7 + 22i, -32 - 9i)$$

Answer: Well, by definition, $\lambda(z_1, z_2, \dots, z_n) = (\lambda z_1, \lambda z_2, \dots, \lambda z_n)$. Now, we have $\lambda = \frac{12-5i}{2-3i} \neq \frac{-32-9i}{-6+7i} = \lambda$ which is a contradiction, thus, there exists no such λ .