Math 110 Homework 1

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1 Chapter 1.A

a. Problem 11
Explain why there does not exits $\lambda \in \mathbb{C}$ such that

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

By the definition of multiplication of scalars and lists we know that λ must satisfy all the following equations.

$$\begin{aligned}\lambda(2-3i) &= 12-5i \\ \lambda(5+4i) &= 7+22i \\ \lambda(-6+7i) &= -32-9i\end{aligned}$$

Solving for the first two equations gives us that

$$\lambda = 3+2i$$

But for the last equation we find that this value for λ does not work. Therefore no such λ exists that satisfies all three equations and therefore the larger equation.