1. (10 marks) Show that 

\[(a + b) + c = a + (b + c)\]

for every set of (generic) vectors \(a, b,\) and \(c\).

2. (10 marks) Suppose that \(a\) and \(b\) are (generic) vectors. Prove the following parallelogram identity:

\[\|a + b\|^2 + \|a - b\|^2 = 2(\|a\|^2 + \|b\|^2).\]

(Start with the left-hand side, and use the fact that \(\|c\|^2 = c \cdot c\) for any vector \(c\).)