UM 204: QUIZ 5

March 1, 2024

Duration. 15 minutes

Maximum score. 10 points

Problem. Let $\{a_n\}_{n\in\mathbb{N}}$ and $\{b_n\}_{n\in\mathbb{N}}$ be bounded real sequences such that

$$\lim_{n\to\infty} b_n = b > 0.$$

Prove that

$$\limsup_{n\to\infty}(a_n b_n) = (\limsup_{n\to\infty} a_n)b.$$

You may use known facts about convergent sequences and suprema of sets without proof, but clearly state what you are using.