

MATH 330 – HW #26

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Project 11.14: Prove that $\sqrt{2} + \sqrt{3}$ is irrational. Generalize.

Proof: We will prove by contradiction. Assume that $\sqrt{2} + \sqrt{3} \in \mathbb{Q}$. Then $(\sqrt{2} + \sqrt{3})^2 = 5 + 2\sqrt{6} \in \mathbb{Q}$. This means that $\sqrt{6} \in \mathbb{Q}$, which is not true according to Theorem 11.12. \square