

**Comprehension questions**

PROBLEM 9.1. *Among all rectangles with area 1, is there one with the lowest principal frequency? Is there one with the highest principal frequency? (And why or why not?)*

PROBLEM 9.2. *Show that every resonance frequency of the  $1 \times 1$  square is also a resonance frequency for an arbitrary  $a \times b$  rectangle, where  $a$  and  $b$  are integers.*

PROBLEM 9.3. *The square has a  $90^\circ$  rotational symmetry. It is true that all its resonance modes must have the same symmetry? Give an argument of why they do, or a counterexample.*

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