1. Find the steady-state temperature distribution \( u(x, y) \) in the square \( 0 \leq x \leq 2, \ 0 \leq y \leq 2 \) if the lower side is kept at a temperature \( u = \sin \frac{\pi x}{2} \) and \( u = 0 \) on the other three sides.

2. Find the steady-state temperature \( u(x, y) \) in the strip \( 0 \leq x \leq \pi, \ y > 0 \) with the vertical sides perfectly insulated, \( u(x, y) \) bounded as \( y \to \infty \) and the lower side kept at temperature \( x \). (Do from first principles, don’t use Laplace transform!)


4. Kreyszig Set 11.10, p.635, Q11; Q12 (BONUS), Q13; Q14 (BONUS).