

### Exercise 3

Solve the inhomogeneous Neumann diffusion problem on the half-line

$$\begin{aligned}w_t - kw_{xx} &= 0 && \text{for } 0 < x < \infty, \quad 0 < t < \infty \\w_x(0, t) &= h(t) && w(x, 0) = \phi(x),\end{aligned}$$

by the subtraction method indicated in the text.