1. Using the definition find the Laplace transform \( \mathcal{L}\{f(t)\} \) (alias \( F(s) \)) of \( f(t) = e^{-t} + 3 \).

2. Approximate, with mesh-size \( h = 1 \), the solution of the boundary-value problem

\[
u_{xx} + u_{yy} = 0 , \quad 0 < x < 2 , \quad 0 < y < 2 ;
\]

subject to the boundary conditions

\[
u(0, y) = 1 , \quad 0 < y < 2 ; \quad u(2, y) = 2 , \quad 0 < y < 2 ;
\]

\[
u(x, 0) = -1 , \quad 0 < x < 2 ; \quad u(x, 2) = 3 , \quad 0 < x < 2 .
\]