HG3MCE—Computerised Mathematical Techniques in Engineering

Problem Class 5

Exercises on PDEs for the problem class of 4th May.

Try for yourselves 'toy' examples of the standard PDEs. Divide [say] the region $0 \leqslant x,y,t \leqslant 1$ [y or t depending on the equation], into a small number of x-strips and y- or t-strips, such as 3 or 4, apply boundary conditions such as $\phi(0,y) = \phi(1,y) = 0$, $\phi(x,0) = x(1-x)$ [plus whatever extra conditions you like for Laplace/wave], and construct the appropriate equations. Solve!

Note that there will be a fair amount of symmetry, so there will not be many equations even in the worst cases. The point is [obviously!] not to get good solutions, but to get you used to working with finite-difference approximations, and to see how they work.

[No solutions supplied.]