

工程數學 (四) - 偏微分方程作業六

8:20-10:10, Apr. 9, 1998

1. Solve the PDE

$$u_{tt} = u_{xx}, \quad \text{for } -\infty < x < \infty, \quad t > 0$$

with initial conditions

$$u(x, 0) = 0, \quad \dot{u}(x, 0) = \frac{1}{a}[H(x-a) - H(x+a)]$$

where $H(t)$ is Heaviside function.

- (1). As $a = 1$, check the same problem of homework.
- (2). Discuss the limiting case for $a \rightarrow 0$.
- (3). Plot the 3-D plot of $u(x, t)$.
- (4). Plot the contour of $u(x, t)$ in $x-t$ plane.

2. Solve the PDE

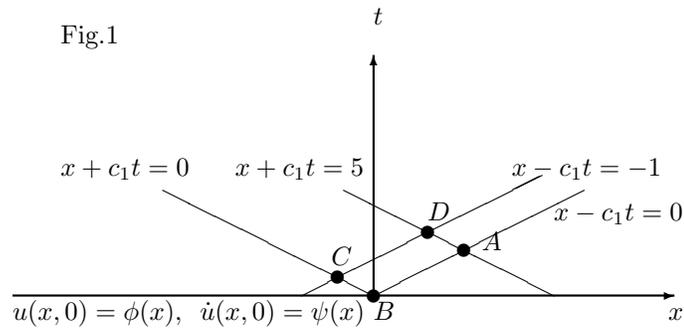
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