

Assignment # 6

Solve the following using Laplace transform.

$$1) \frac{\partial w}{\partial x} + x \frac{\partial w}{\partial t} = 0$$

$$w(x,0) = 0, w(0,t) = t$$

2)

$$\frac{\partial u}{\partial x} + 2x \frac{\partial u}{\partial t} = 2x$$

$$u(x,0) = 1, u(0,t) = 1$$

3)

$$\frac{\partial^2 w}{\partial t^2} = c^2 \frac{\partial^2 w}{\partial x^2}$$

$$w(0,t) = \sin t, 0 \leq t \leq 2\pi$$

$$= 0, \text{ otherwise}$$

$$\lim_{x \rightarrow \infty} w(x,t) = 0$$

$$w(x,0) = 0, \frac{\partial w(x,0)}{\partial t} = 0.$$