**Final Exam 425 Math**

# Question1

1. **Determine the integral surface of the partial differential equation :**

**Which passes through the curve:**

**b) Find the general solution of :**

**Question2**

**a)Solve the Cauchy problem:**

**b) Find the general solution of the equation:**

# Question3

**a)Show that the surface harmonics are orthogonal on a sphere S of radius r=a, where ,**

**b)prove that any pair of solutions of the Neumann problem:**

**having continuous second derivatives on ,differ by a constant ,where R is a bounded region in the xy plane.**

**c)Use Alembert’s solution to solve the wave equation:**

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## Question4

**Solve the Laplace’s equation on the rectangle :**

**Subject to:**

**Question5**

**Solve the Heat equation:**

**u(1,t)=0,**

**----------------------------------------------------------------------------------------------------------------------- Good Luck**

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