**Second Midterm Exam ( 201Math ) Math Department**

**First term 1434-1435 Duration: 2 Hours**

 **[ 6 marks ]**

**1. Let**

 **a) Evaluate .**

 **b) Find the domain of**

 **c) Sketch the domain of the function**

**2. a) Determine the level curves of the function for**

 **b) Sketch the graph of the function**

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**[ 5 marks ]**

**a. Show that the following limit does not exist, .**

**b. Find the limit ,**

**c. Determine the set of points at which the following function is continuous**

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 **[ 5 marks ]**

**a. Find , for**

**b. Use the implicit differentiation to find .**

**c. Suppose that (1,1) is a critical point of a function with continuous second derivatives, where and , what can you say about**

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 **[ 4 marks ]**

**a. Use the chain rule to find the indicated partial derivative**

 **, , y = , ,**

**b. If and is differentiable , show that satisfies the**

**equation .**

**[ Hint put and then ]**

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