**Department of Mathematics**

**College of Sciences**

**King Saud University**

**Math 246**

**First Mid exam**

**First semester, 1433-1434H**

**Time: 90 min.**

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| **Name:** |
| **Student No.** |

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| **Question number** | I | II | III | IV | total |
| **Answer** |  |  |  |  |  |

### **I.** . **Choose the correct answer**

1) If A is a 4x4 matrix , and tr(A) = 5 , then tr(3A) =

a) 25 b) 15 c) 20 d) 9

1. If A is an invertible square matrix, and k is non-negative integer then kA

a) invertible b) might be non-invertible

3) If A is a square matrix then A adj (A) is

a) a zero matrix b) an upper triangular c) a diagonal matrix d) none

4) If A and B are of the same size then (A+B) 2=

a) A2+B2 b) A2+B2+2AB c) A2-B2+BA +AB d) none

5)If A**-1**=  then the linear system AX=0

a) has no solution. b) X=  c) X=  d) none

6) **(At )-1**=  then **A=**

a)  **b)**  c)  d) none

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| **Question number** | 1 | 2 | 3 | 4 | 5 | 6 |
| **Answer** |  |  |  |  |  |  |

**II.** Solve the following linear system

x1+2x2-3x3 = 6

2x1- x2+4 x3 = 1

x1- x2 +x3 = 3

**III**. Prove that a system of linear equations either has no solution or one solution or infinitely many solution.

1. If A is an invertible symmetric matrix, then prove that A**-1** is also an invertible symmetric matrix.