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| **King Saud University** | KSU logo tiff.tif |  **Math 280**  |
| **Science and Medical Studies Section for girls** | **First Sem. 1436-37 H** |
| **College of Science**  |  **First midterm Exam** |
| **Department of Mathematics** |  **90 minuets** |

**Question I**

1. Find the supremum and the infimum of S=.
2. Let S and T be subsets of real numbers, show that

Inf(S+T)=inf S + inf T

**Question II**

1. State and prove the density theorem of irrational numbers.
2. Let S be a bounded set with b=Sup S. Prove that b is a boundary point of S.

**Question III**

Let A= . Find the following:

 Interior of A

 Exterior of A

 Boundary of A

 Limit points of A

 Isolated points of A

 The closure of A

**Question IV**

Prove or disprove the following, where A and B are subsets of R.

1. If Sup A exists then Sup kA=k Sup A, for any real number k.
2. N0=N.
3. Inf A-B= inf A- inf B.
4. Inf 
5. 5 is an upper bound of $\left\{x\in R:x^{2}-4<0\right\}$.
6. The union of infinitely many closed sets is closed.