

**QUIZ NO. 1, SEMESTER II, 1444**  
**DEPT. OF MATHEMATICS, COLLEGE OF SCIENCE, KSU**  
**MATH 280 FULL MARK: 10 TIME: 35 MIN**

**Q1.** [3] Determine  $\sup A$  and  $\inf A$  where they exist:

- i)  $A=[0, 1)$ ,
- ii)  $A = \{x \in \mathbb{Q} : 0 \leq x < 1\}$ ,
- iii)  $A = \{n \in \mathbb{N} : \frac{(-1)^n}{n}\}$ .

**Q2.** [3] Prove  $\sup\{\frac{3n^2}{n^2+n-1} : n \in \mathbb{N}\} = 3$ .

**Q3.** [4] Prove  $\lim_{n \rightarrow \infty} \frac{n^2-1}{n^2+1} = 1$ .