

Problem Set 5 Foundations Due 3/4/2011

Four of these problems will be graded, with each problem worth 5 points. Clear and complete justification is required for full credit. You are welcome to discuss these problems with anyone and everyone, but must write up your own final submission without reference to any sources other than the textbook and instructor. Submissions must be on clean paper with no ragged edges.

1. $A \cup \bigcap_{i \in I} B_i = \bigcap_{i \in I} (A \cup B_i)$

2. Suppose that r is a real number. Then $r^2 \geq r$ and $\frac{1}{r^2} \leq \frac{1}{r}$.

3. $\forall x, y \in \mathbb{R}, |x| - |y| \leq |x - y|$

4. For sets $A, B, C,$ and $D,$ $(A \cup B) \times (C \cup D) = (A \times C) \cup (B \times D).$

5. The product of an even function with an odd function, both with domain $D,$ is _____.

6. Let f and g be bounded functions, both with domain $D.$ Then $f - g$ is a bounded function.

7. The composition of an even function with an odd function is _____.

