MATH 401 INTRODUCTION TO ANALYSIS-I, FALL TERM 2009, PROBLEMS 2

Review of Calculus, Sets

Return by Wednesday 9th September

1. Investigate the nature of the stationary points of the curve $y = (x-1)(x-a)^4$ in the cases of (i) $a > 1$, (ii) $a < 1$. Sketch on separate diagrams the curves $y = (x-1)(x-a)^4$ when $a > 1$ and $a < 1$.

2. Let $A = \{1, 3, 5, 7, 9, 10, 12\}$, $B = \{1, 3, 5, 11\}$, $C = \{2, 4, 9\}$. Find $A \cup B$, $B \cup C$, $B \cap C$, $C \cap A$.

3. Let A, B, C be three sets. Prove that $(B \cup C) \cup A = B \cup (C \cup A)$.

4. Let A, B, C be three sets. Prove that $C \backslash (A \cup B) = (C \backslash A) \cap (C \backslash B)$.