

DISCRETE MATHEMATICS MIDTERM EXAM 2014-2015

- 1) (30 pts) Prove that if x and y are real numbers, then $\max(x, y) + \min(x, y) = x + y$.
- 2) (40 pts) Suppose that A, B and C are sets such that $A \oplus C = B \oplus C$. Must it be the case that $A = B$.
- 3) (30 pts) Use mathematical induction to prove that $\sum_{j=1}^n j^4 = n(n+1)(2n+1)(3n^2+3n-1)/30$ whenever n is a positive integer.

You have 45 minutes, good luck...

$A \oplus C = B \oplus C$