

MATH 3012 Applied Combinatorics (Fall'07) – Sample Quiz 1

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Time: 30 minutes

1. State the binomial theorem.
2. (a) How many subsets of size k does a set of size n have?
(b) What is the total number of subsets of a set of size n ?
3. There are n distinct men and n distinct women. In how many ways can we pair them up (say for ballroom dancing) into man-woman pairs?
4. (a) How many nonnegative integer solutions does one have for the equation:

$$x_1 + x_2 + x_3 + x_4 = 10.$$

- (b) What is the answer to (a), if we want $x_1, x_2 \geq 1$ and $x_3, x_4 \geq 0$?