

MATHEMATICS ENRICHMENT CLUB.

Problem Sheet 15, September 2, 2014 ¹

1. Which is larger 100^{600} or $300!$?
2. A chess board is an 8×8 grid of squares coloured white or black so that no two adjacent squares are the same colour. Given tiles that are 2×1 grid squares it is possible to cover the chessboard completely, and it takes precisely 32 tiles. Show that it is impossible to cover a chessboard with opposite corners removed.
- 3.

Two functions, f and g , are said to be *orthogonal* if $\int f; g_i = 0$. Let $p_0(x) = 1$ and $p_1(x) = x$,

(a) Show that p_0 and p_1 are orthogonal.

(b) Find $p_2(x)$