MATHEMATICS ENRICHMENT CLUB.
Problem Sheet 15, September 2, 2014 [1]

1. Which is larger 1000^{100} 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 $\langle f; g \rangle = 0$. Let $p_0(x) = 1$ and $p_1(x) = x$,

(a) Show that p_0 and p_1 are orthogonal.

(b) Find $p_2(x$