## 1995 Paper 1 Question 13(c)

a.

b.

c. Show that $x^x(1-x)^{1-x} \geq \frac{1}{2}$ for $0 < x < 1$ where, if the equality holds, then $x = \frac{1}{2}$.

Deduce that $a^a b^b \geq \left(\frac{a+b}{2}\right)^{a+b}$ where, if the equality holds, then $a = b$.

(8 marks)