Problem Solving
Set 17

20 July 2012

1. Two different ellipses are given. One focus of the first ellipse coincides with one focus of the second ellipse. Prove that the ellipses have at most two points in common.

2. The set of pairs of positive real (x, y) such that $x^y = y^x$ form the straight line $y = x$ and a curve. Where does the curve cut the line?