HIGHER SET THEORY
FORMAL DERIVATIONS AND NATURAL PROOFS
EXERCISE SHEET 10

1) Let A, B, C, and D be points in the plane. Give polynomial equations for each of the following statements:

a) The line AB is perpendicular to the line BC.

b) A, and B lie on the circle with centre C.

c) The line AD bisects the angle $A\hat{B}C$.

d) A bisects the line segment AB.

2) Use Wu's method to prove the following easy theorem of Euclidean geometry:

Let A, B, C form an isosceles triangle such that $AC = CB$. If D is on AB and CD is perpendicular to AB then:
a) $AD = DB$, and
b) if $A\hat{C}B$ is a right angle, then D is the centre of the circumscribed circle.

What happens to the dependent variables and the parameters in (b)? Explain any non-degenerate cases that are produced.

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