

## Homework 2: Vieta's formula

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**Problem 1.**

Find all pairs of real numbers  $p \neq q$  such that  $2p$  and  $p + q$  are roots of the quadratic equation  $x^2 + px + q = 0$ .

**Problem 2.**

Let  $ABCD$  be a convex quadrilateral. Points  $E, F, G, H$  are marked on the sides  $AB, BC, CD, DA$  respectively. Show that the circumcircles of triangles  $HAE, EBF, FCG$  and  $GDH$  cover  $ABCD$  completely.