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by parmenides51

1	Solve $\|\|\|\|x^2-x-1\|-2\|-3\|-4\|-5\| = x^2+x-30$.
2	Circle C center O touches externally circle C' center O'. A line touches C at A and C' at B. P is the midpoint of AB. Show that $\angle OPO' = 90^o$.
3	Find non-negative integers a, b, c, d such that $5^a + 6^b + 7^c + 11^d = 1999$.
4	An equilateral triangle of side x has its vertices on the sides of a square side 1. What are the possible values of x?
5	x_i are non-negative reals. $x_1 + x_2 + ... + x_n = s$. Show that $x_1x_2 + x_2x_3 + ... + x_{n-1}x_n \leq \frac{s^2}{4}$.
6	S is any sequence of at least 3 positive integers. A move is to take any a, b in the sequence such that neither divides the other and replace them by gcd (a, b) and lcm (a, b). Show that only finitely many moves are possible and that the final result is independent of the moves made, except possibly for order.