Junior Balkan MO 1998

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1	Prove that the number $\underbrace{111\dots11}_{1997}\underbrace{22\dots22}_{1998}5$ (which has 1997 of 1-s and 1998 of 2-s) is a perfect square.
2	Let $ABCDE$ be a convex pentagon such that $AB=AE=CD=1$, $\angle ABC=\angle DEA=90^\circ$ and $BC+DE=1$. Compute the area of the pentagon. *Greece*
3	Find all pairs of positive integers (x,y) such that $$x^y=y^{x-y}.$$ *Albania*
4	Do there exist 16 three digit numbers, using only three different digits in all, so that the all numbers give different residues when divided by 16? *Bulgaria*