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by jasperE3

Problem 1 Positive integers a and b have n digits each in their decimal representation. Assume that m is a positive integer such that $\frac{n}{2} < m < n$ and assume that each of the leftmost m digits of a is equal to the corresponding digit of b. Prove that

$$a^{\frac{1}{n}} - b^{\frac{1}{n}} < \frac{1}{n}.$$

Problem 2 Describe how to place the vertices of a triangle in the faces of a cube in such a way that the shortest side of the triangle is the biggest possible.

Problem 3 If all edges of a non-planar quadrilateral tangent the faces of a sphere, prove that all of the points of tangency belong to a plane.
