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PROBLEM OF THE WEEK

10/17/00 due NOON 10/31/00

CAN YOU GIVE US A SOLUTION?

Problem No. 8 (Fall 2000 Series)

Let \triangle be an isosceles triangle for which the ratio of the length of a side to the length of the base is rational.

Prove that the radius of the incircle of \triangle is rational if and only if the two right triangles formed by the altitude to the base are similar to a right triangle with integer side lengths.

CORRECTION:

Problem No. 8 is incorrect as stated. The hypothesis “the ratio of the length of a side to the length of the base is rational” should be replaced by “the length of a side and the length of the base are rational.”

A panel in the Mathematics Department publishes a challenging problem once a week and invites college & pre-college students, faculty, and staff to submit solutions. The objective of this is to stimulate and cultivate interest in good mathematics, especially among younger students. Solutions are due within two weeks from the date of publication and should be sent by campus or U.S. mail to:

PROBLEM OF THE WEEK, **8th Floor**, Math Sciences Bldg., Purdue Univ.,
West Lafayette, IN 47907

Solvers should include their name, address, and **status at the University or school**.

The names of those who submitted correct solutions will be posted in the Math. Library, along with the best solution. Every Purdue student who submits three or more correct solutions will receive a Certificate of Merit. A prize fund of \$150.00 will be distributed among the Purdue undergraduates who have contributed at least six correct solutions for the total fall 2000 series.