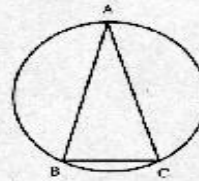


MATH AWARENESS MONTH COMPETITION

2000 Examination for 10th-12th Grades

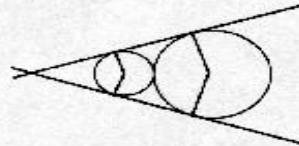
DIRECTIONS: [40 Minutes - 5 Questions] Start each new problem on a separate page. Show your work! Answers must be exact. You are allowed to use a calculator. You are not allowed to borrow or interchange calculators during the test.

1. Triangle ABC is inscribed in a circle, and $\angle B = \angle C = 4\angle A$. B and C are adjacent vertices of a regular polygon of n sides inscribed in this circle. Find n .



2. If $\log_4 a + \log_4 b^2 = 5$ and $\log_8 b + \log_4 a^2 = 7$, find ab .
3. An urn contains 16 balls of two colors, red and blue. Four balls are drawn from the urn without replacement. The probability of getting exactly 2 red and 2 blue balls is $\frac{1}{20}$. The urn contains more red than blue balls. How many blue balls were originally in the urn?

4. Two circles sit in the wedge $y = \pm \frac{x}{3}$ as shown. The radius of the inner, smaller circle is 1. The radius of the outer circle is R . Find R .



5. If $\sec x + \tan x = \frac{17}{7}$, find $\csc x + \cot x$.