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PROBLEMS.

69. BY E. P. NORTON, ALLEN, MICH.—Given  $x^2 + y^2 = 793$ , . . . (1)  
 $\sqrt[3]{xy^2} + \sqrt[3]{x^2y} = 30$ , . . . (2)

to find  $x$  and  $y$  by quadratics.

70. BY F. P. MATZ, B. E., ED. MATH. DEP. "NATIONAL EDUCATOR", KUTZTOWN, PA.—Given  $y^2 + z^2 = 2500$ , . . . (1),  $x^2 = [130 - (x + t)]^2 \times 1600$ , . . . (2),  $xy = t[130 - (x + t)]$ , . . . (3),  $t^2 = y^2 + (z - 40)^2$ . (4)  
 to find  $x$ ,  $y$  and  $z$ .

71. BY WILLIAM HOOVER, BELLEFONTAINE, O.—Given the sides  $a$ ,  $b$ ,  $c$  of a spherical triangle  $ABC$  to find the radii,  $R$ ,  $r$ , of the circumscribed and inscribed circles.

72. BY A. W. MASON, CEDAR FALLS, IOWA.—Find the maximum cylinder that can be cut from a given oblate spheroid, whose semi-axes are  $a$  and  $b$ .

73. BY CHRISTINE LADD, CHELSEA, MASS.—Find the whole number of sets of three integers having a constant sum.

74. BY PROF. W. W. HENDRICKSON, U. S. NAVAL ACAD ANNAPO- LIS, MD.—Find the equation of the locus of the middle point of a chord to the hyperbola  $x^2 - y^2 = 2a^2$ , the chord being of constant length and equal to seven times the transverse axis.

QUERY, BY PROF. A. HALL. — Into how many parts can  $n$  planes di- vide space.

- QUERY, BY E. T. T. GAMBIER, O.—Is  $65537 (= 2^{16} + 1)$  a prime?

*Errata.* On page 8, line 16, for " $3a^3$ " which occurs in the numerator of the fraction, read  $a^3$ ; and on page 58, line 4, and lines 4 and 6 from bot- tom, for " $t^3$ " in the numerator of the left member of the equation, read  $l$ . Also, on page 59, line 10, multiply the left member of the equation by  $\sin \theta$ .

[*Note.* Several correspondents have found fault with Mr. Farrow's so- lution of 53, but no other solution has been offered.

It is evident that the formula used by Mr. Farrow to estimate the effect of the atmospheric resistance, does not apply in calculating the velocity gen- erated while the ball is passing from the breech to the muzzle of the gun, which is the case to be considered; for during that time the only pressure on the rear of the ball is that of the gas generated. The result obtained by Mr. Farrow cannot, therefore, be correct.]