University of the State of New York

Examinations Department

79th examination

PLANE TRIGONOMETRY

Thursday, Jan. 28, 1892—9 : 15 a. m. to 12 : 15 p. m., only

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48 credits, necessary to pass, 36

NOTE.—Draw carefully and neatly each figure, using letters instead of numerals. Arrange work logically.

1. Define and illustrate (*a*) negative angle; (*b*) angle of depression; (*c*) system of logarithms. 6

2. Mention (*a*) each function of the angle of a triangle which determines whether the angle be greater or less than 90°; (*b*) each function which fails to do so. 2

3. Find sin A, tan A and cos A when a, the side opposite A in a right triangle, equals two-thirds of c the hypotenuse. Also find b if cot $A = 3$ and $a = 12$. 6

4. Find (*a*) the complement of $(-40°)$; (*b*) tan $(-20°)$ in terms of $+20°$; (*c*) cos A and tan A in terms of sin A. 5

5. Find the value of the trigonometric functions of 60°. 6

6. Show that (*a*) cos $(270°-A) = -\sin A$. 2

(*b*) sin $(180°-A) = +\sin A$. 2

7. If A, B and C represent the angles of an oblique triangle and a, b and c their opposite sides respectively, prove that

(*a*) $a = b\cos C + c\cos B$. 3

(*b*) $b^2 = a^2 + c^2 - 2ac\cos B$. 4

8. In a parallelogram, given d a diagonal, and A and B the angles which this diagonal makes with the sides; find, in terms of d, A and B, the sides a and b, and the area S of the parallelogram. 6

9. Let A represent the angle of elevation of C, the top of an inaccessible hill observed from a point M on a plain, a the distance from M to N on a line MN perpendicular to MC, and B the angle MNC. Find h the height of the hill and d the distance from M to a point directly under C. 6