University of the State of New York

Examinations Department

111th examination

PLANE TRIGONOMETRY

Thursday, June 15, 1893—9 : 15 a. m. to 12 : 15 p. m., only

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100 *credits, necessary to pass,* 75

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

1 Define and illustrate *complement of an angle, fourth quadrant, cotangent, logarithmic cosecant.* 16

2 Construct (*a*) angle A when $\tan A = \frac{4}{3}$; 6

(*b*) a right triangle when $\sin A = \frac{2}{5}$ and b (adjacent side) $= 3$. 10

3 When cosecant $A = 1\frac{3}{5}$, find the value of each of the other functions of A. 10

4 Prove that $\sin (A + B) = \sin A \cos B + \cos A \sin B$. 16

5 Show that $\sin (180° + A) \sin (270° - B) - \cos (180° + A) \cos (270° - B) = \sin (A - B)$. 12

6 Given log sin A and log cos A, to find log tan A and log sec A. 8

7 The length of one side of a triangle is 300 feet and the adjacent angles 30° and 120° respectively find (*a*) the length of the other two sides of the triangle; (*b*) the area of the triangle. 13

8 A person on one side of a river desires to ascertain the hight of a tree on the opposite side. Show what measurements must be made and what formulas are necessary to compute h the hight of the tree, and d the distance to its base. 9