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

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.

2 Construct (a) angle $A$ when $\tan A = \frac{4}{3}$;
   (b) a right triangle when $\sin A = \frac{2}{5}$ and $b$ (adjacent side) = 3.

3 When cosecant $A = \frac{13}{5}$, find the value of each of the other functions of $A$.

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

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

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

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.

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