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University of the State of New York

Examination Department

119th examination

PLANE TRIGONOMETRY

Thursday, March 15, 1894—9 : 15 a. m. to 12 : 15 p. m., only

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Answer 10 questions but **no more.** *Division of groups is not allowed. If more than 10 questions are answered only the first 10 of these answers will be considered. Draw carefully and neatly each figure, using letters instead of numerals. Arrange work logically. Each complete answer will receive 10 credits.*

1 Define *sine, tangent, negative angle, logarithm, solution of triangle.*

2 Indicate the work of finding the length of an arc of 1 degree in a circle whose radius is 8 ft.

3–4 Derive the formulas generally used in solving right triangles, and indicate their application.

5–6 In the oblique triangle ABC, we have given the angle A and the sides a and b; indicate in full the process of finding the remaining parts.

7–8 Derive the formulas used in solving a triangle when its three sides are given.

9 Give in tabular form the algebraic signs of six trigonometric functions of an angle in each of the four quadrants.

10–11 In a right triangle the base is 18 ft and the angle at the base 60°; find the remaining parts.

12–13 Derive an equivalent expression for each of the following : $\sin 2a$, $\cos 2a$, $\tan 2a$, $\cot 2a$.

14–15 Explain how the hight of a hill may be determined from measurements made on an adjoining plain. Illustrate by diagram.