University of the State of New York

Examinations Department

111th examination

ADVANCED ALGEBRA

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

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100 *credits, necessary to pass,* 75

NOTE — Give each step of solution. Reduce fractions to lowest terms. Express final result in its simplest form and mark it *Ans.*

1 Prove that a quadratic equation of one unknown quantity can not have more than two roots. 15

2 Find the meaning of a^{-p}, p being integral or fractional. 15

3 Derive the formula for finding the sum of an infinite series whose ratio is less than 1. Illustrate its use by finding the value of the repetend $.\dot{3}$. 20

4 Expand $\sqrt{1-3x}$ into a series to three terms by the method of undetermined coefficients. 15

5 Find by the differential method the 12th term of the series 4, 11, 28, 55, 92. 20

6 Find all the roots of the equation

$$x^4 - 9x^3 + 29x^2 - 39x + 18 = 0.$$ 15