University of the State of New York

Examinations Department

107th examination

ALGEBRA

Wednesday, January 25, 1893—9:15 a. m. to 12:15 p. m., only

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 Define *elimination, surd, imaginary quantity, literal equation, identic equation.* 10

2 Simplify $3x-2y-(x-y)-(x+y-(-x-y))$. 5

3 Simplify $\frac{2a-2b}{3a+3b}-\frac{a+b}{a-b}+\frac{a-b}{a+b}$. 10

4 Solve
$$2x+3y=13$$
$$y+3z=6$$
$$3x-2z=4.$$ 9

5 Expand by the binomial formula $\left(\frac{1}{x}-\frac{2}{y}\right)^6$. 7

6 Resolve the following quantities into their prime factors:
$$6a^2+5ab-6b^2$$
$$x^4+x^2y^2+y^4$$
$$a^8-b^8.$$ 12

7 Solve
$$2x^2+3y^2=35$$
$$2x+3y=13.$$ 12

8 The difference of two numbers is 1 and the difference of their cubes is 37; find the numbers. 10

9 Simplify $\frac{\sqrt{a^3}\times\sqrt[3]{a^2}}{a^{\frac{1}{2}}}$, $\frac{\sqrt{20}+\sqrt[4]{400}}{\sqrt{22\frac{1}{2}}}$. 10

10 Multiply $a^{\frac{1}{2}}+b^{\frac{1}{2}}$ by $a^{\frac{1}{2}}+b^{\frac{1}{2}}$. 8

11 Form the equation whose roots are $\frac{1}{2}$ and $-\frac{1}{3}$. 7