University of the State of New York.

36TH ACADEMIC EXAMINATION.

ALGEBRA.

(Through Quadratics.)

MONDAY, January 20, 1890—Time, 9:30 A. M. to 12:30 P. M., only.

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48 credits, necessary to pass, 36.

1. Explain the difference between similar and dissimilar terms, and give an example of each.. 4

2. Explain the difference between arithmetical subtraction and algebraic subtraction, and give an example of each............... 4

3. Simplify the following expression :

$$(x + y) (x^3 - y^3) \left[x^2 - y (x - y) \right]................ 3$$

4. Find the prime factors of each of the following : $2x^8 + 16 x^7 + 32x^6$; $x^2 - 10x + 21$; $a^5 - b^5$ 6

5. Define equation; transposition; elimination; quadratic equation. What is meant by the degree of an equation ?........... 5

6. Solve $\dfrac{x}{a} + \dfrac{x}{b} + \dfrac{x}{c} = d$ 2

7. Solve, using elimination by comparison :
$$5x - 12y = 7$$
$$10x - 9y = 4$$ 3

8. What number is that which being multiplied by 7 gives a product as much greater than 20 as the number itself is less than 20 ? 2

9. What fraction is that which becomes $\frac{1}{2}$ when its numerator is increased by 1 and its denominator diminished by 1; but which becomes $\frac{1}{3}$ when its numerator is doubled and its denominator increased by 5 ? (Give statement without solution) 3

10. Expand $(a + b)^8$ and give the principle by which the coefficients and exponents of the successive terms are determined... 3

11. Find the cube root of $x^6 - 3x^5 + 5x^3 - 3x - 1$........ 3

12. Form the quadratic equation whose roots are -5 and $+7$ 2

13. Simplify $\sqrt{5} \times \sqrt[3]{2} \times \sqrt[4]{4}$............................ 2

14. $x^3 + y^3 = 35$
$x + y = 5$ 3

15. An excursion party had $2.00 to pay, but before the bill was paid 10 of the party went away, and those that remained had each to pay 10 cents more ; find how many were in the party at first 3