New York State Education Department 2/9

205TH HIGH SCHOOL EXAMINATION

INTERMEDIATE ALGEBRA

Monday, September 18, 1911—9.15 a. m. to 12.15 p. m., only

Answer the first six questions and two of the others. No credit will be allowed unless all operations (except mental ones) necessary to find results are given; simply indicating the operations is not sufficient. Each complete answer will receive 12½ credits. Papers entitled to less than 75 credits will not be accepted.

1 Prove *each* of the following:

$a^m \times a^n = a^{m+n}$, m and n being positive integers

$(a^m)^n = a^{mn}$, m and n being positive integers

2 From $l = a + d(n-1)$ deduce the value of a, d and n.

3 Find the prime factors of the following: $x^3+a^3+x^2-a^2$; $9y^{5n}-y^{3n}$; x^6-x^3-2; $a^{15}+b^{15}$; $a^2\sqrt{2}-b^{-4}\sqrt{32}$

4 Solve by the graphic method $\begin{cases} 3x+2y=5 \\ 2x-3y=12 \end{cases}$

5 Find the cube root of the following:

$$x^6-12x^5-70x^3+\frac{195x^4}{4}+\frac{195x^2}{16}-\frac{3x}{4}+\frac{1}{64}$$

6 Solve $x^2-2\sqrt{x^2+4x-5}=13-4x$

7 Plot the graph of $x^2+y^2=36$

8 What is the price of eggs apiece if selling 10 more for \$1 lowers the price 4 cents per dozen?

9 The sum of three numbers in geometric progression is 7; the sum of the first and last is 10. Find the numbers.

10 Prove that a quadratic equation can not have more than two roots.