190TH HIGH SCHOOL EXAMINATION

ELEMENTARY ALGEBRA

Monday, September 17, 1906—9.15 a. m. to 12.15 p. m., only

Answer the first four questions and four of the others. Give all operations (except mental ones) necessary to find results. Reduce each result to its simplest form and mark it Ans. Each complete answer will receive 12½ credits. Papers entitled to 75 or more credits will be accepted.

1 Simplify $\dfrac{x+1}{\dfrac{1}{1-\frac{1}{x}}-1}$

2 Factor *five* of the following: $3x^2-7xy-6y^2$, $a^{2m}+2a^m+1$, $2x^4-8$, $1+a^5$, $4a^4+3a^2b^2+b^4$, $6xy-4y+9x-6$, x^6+8

3 Solve $\dfrac{x^2}{3a}+x-a=5a$

4 Solve $\begin{cases} x-y=5 \\ xy=104 \end{cases}$

5 Multiply $x^{\frac{2}{3}}-2x^{\frac{1}{3}}+1$ by $x^{\frac{1}{3}}-1$. Express the product with radical signs.

6 Twice the product of two consecutive numbers exceeds 6 times their sum by 6; find the numbers.

7 Solve $\begin{cases} bx+ay=2a^2b \\ 2x+y=a(2a+b) \end{cases}$

8 Solve $6-\sqrt{4x+1}=\dfrac{5}{\sqrt{4x+1}}$

9 Find the two sums into which $1200 must be divided in order that the interest on one at 6% shall equal the interest on the other at 4%.

10 A man bought 5 sheep for what 2 cows cost; had he paid $2 less apiece for the sheep, 5 sheep and 6 cows together would have cost $150. Find the cost of each.

11 Write the first four terms of the expansion of $(2a+3b)^7$. Give all computations required.

12 Prove that if four quantities are in proportion they are in proportion by composition.