189TH HIGH SCHOOL EXAMINATION

ELEMENTARY ALGEBRA

Monday, June 11, 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 if written by students in class A; those entitled to 60 or more credits will be accepted if written by students in class B.

1 Factor $3x^3-6x^2-9x$, a^5+b^5, x^3+x^2-x-1, $a^4+a^2b^4+b^8$, x^6+y^3

2 Solve $\frac{x^2}{a}+a-2x=\frac{b^2}{a}$

3 Solve $\begin{cases} x^3-y^3=665 \\ x\ -y\ =5 \end{cases}$

4 Simplify $\frac{1}{3}\sqrt{45}+4\sqrt{\frac{1}{4}}-\sqrt{125}$; $\sqrt{5}\times\sqrt[3]{6}$; $(2+\sqrt{x+1})^2$

5 Expand by the binomial theorem $(x-2y)^6$, giving all the work for finding the coefficients.

6 A man is 5 times as old as his son; 3 years ago he was 9 times as old as his son. Find the present age of the father.

7 Solve $\begin{cases} \frac{x}{a}+\frac{y}{b}=2 \\ \frac{x}{b}+\frac{y}{a}=\frac{a^2+b^2}{ab} \end{cases}$

8 Solve $\sqrt{x-7}+\frac{6}{\sqrt{x+1}}=\sqrt{x+1}$

9 The product of the squares of two numbers is 168 greater than twice the product of the numbers; find the product of the numbers.

10 Simplify $\frac{x+y}{x-y}+\frac{4xy}{y^2-x^2}-\frac{x-y}{x+y}$