

High School Department

181ST EXAMINATION

ALGEBRA

Thursday, March 24, 1904—9.15 a. m. to 12.15 p. m., only

Answer the first four questions and four of the others but no more. If more than four of the others are answered only the first four answers will be considered. 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 $12\frac{1}{2}$ credits. Papers entitled to 75 or more credits will be accepted.

1 Define five of the following: term, factor, exponent, axiom, simple equation, radical, homogeneous quadratics.

2 Simplify $\frac{\left(\frac{a+b}{a^2+ab+b^2}\right)\left(a^2+\frac{b^4}{a^2+b^2}\right)}{1\div\left(\frac{a}{a+b}+\frac{b}{a-b}\right)}$

3 Factor five of the following: $x^{2a}-2x^a+1$, a^6+64 , $1+a^7$, $2x^3-x^2+2x-1$, $a^2-1+2x-x^2$, $18a^2-27a+4$, a^4-3a^2+9

4 Solve $\sqrt{x}-\sqrt{x-5}=1$ and give an axiom as authority for each step of the solution.

5 Solve $x^2-2x(m-n)+n^2=2mn$

6 Find the least common multiple of $x^3+2x^2-8x-15$ and $x^4-2x^3-5x^2+6x+5$

7 Solve $\begin{cases} \frac{x+y}{x-y}=7 \\ \frac{x+y}{x-y+5}=2 \end{cases}$

8 The cost of 5 pounds of coffee and 3 pounds of tea is \$3.70; the cost of 2 pounds of coffee and 5 pounds of tea is \$3.76. Find the cost a pound of each.

9 Solve $\begin{cases} x^2+3xy=22 \\ x+y=5 \end{cases}$

10 Expand $\left(a-\frac{b}{8}\right)^9$ to four terms by the binomial theorem, giving all the work for finding the coefficients.

11 The sum of the cubes of two numbers is 468; the sum of their squares is 39 greater than the product of the numbers. Find the numbers.

12 Simplify

$$\frac{8+2\sqrt{3}}{6+2\sqrt{3}}; \sqrt[3]{\frac{1}{2}}-2\sqrt[3]{16}+\sqrt[3]{2\frac{3}{4}}; (x^2+2x^{\frac{3}{2}}+x-4)\div(x+x^{\frac{1}{2}}+2)$$

... professional law, medical, dental, veterinary, notary and
 ... After the first edition of the 1898 examination
 ... and professional papers were separated.