185TH HIGH SCHOOL EXAMINATION

ALGEBRA

Thursday, March 30, 1905—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 12½ credits. Papers entitled to 75 or more credits will be accepted.*

1 Factor *five* of the following: $3x^2-5x-12$, $3a^2-3$, a^6+b^6, $x^{2a}-4x^a+4$, a^2b-a^2-ab+a, $x^8+x^4y^2+y^4$, a^5-32

2 Solve $2x-\frac{1}{2}=\frac{x-1}{x+1}+x+2$

3 Find the number that must be added to each term of the fraction $\frac{1}{2}\frac{7}{3}$, that the resulting fraction shall equal $\frac{4}{5}$.

4 Simplify $\sqrt{12}-\sqrt[4]{729}+\sqrt{\frac{1}{3}}+\sqrt{3}$; $\left(x^{\frac{1}{4}}-2x^{\frac{1}{2}}+x^{\frac{1}{4}}\right)\left(x^{\frac{1}{2}}+2x^{\frac{1}{4}}+3\right)$; $\frac{\sqrt{x}-\sqrt{x-2}}{\sqrt{x}+\sqrt{x-2}}$

5 Solve $\begin{cases} 2x-2y+5z=14 \\ 3x+y+3z=8 \\ 5x-5y+2z=14 \end{cases}$

6 A rectangular yard is 20 rods longer than it is wide; its area is 2400 square rods. Find the dimensions of the yard.

7 Expand $\left(a^2b-\frac{2}{3}\right)^6$ to *four* terms by the binomial theorem, giving all the work for finding the coefficients.

8 Solve $\begin{cases} x^2+4y^2=85 \\ xy=21 \end{cases}$

9 Solve $\sqrt{4+x}+\frac{10}{\sqrt{5x}}=\sqrt{5x}$

10 The floor of a room contains 120 square feet, one end wall 80 square feet and one side wall 96 square feet; find the dimensions of the room.

11 Simplify $\left\{1+\frac{\frac{4x^2y^2}{x^4-y^4}}{\frac{x+y}{x-y}-\frac{x-y}{x+y}}\right\} \div \frac{x^4+x^2y^2+y^4}{x^2+y^2}$

12 Define homogeneous polynomial, transposition, evolution, elimination, complete quadratic.