University of the State of New York

High School Department

178TH EXAMINATION

ALGEBRA

Monday, June 15, 1903—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 each step of solution. Reduce fractions to lowest terms. Express final result in 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 $\frac{6x^4+x^3+2x^2-13x+4}{2x^2+3x+4}\times(x^2-3x-2)$

2 Factor *five* of the following: $x^2-5x-24$, $ab-a-b+1$, $8c^6-x^3$, a^5-32, $x^{3a}+1$, $1-a^2+2ab-b^2$, $a^4+a^2b^2+b^4$

3 Solve $\frac{x^2}{3}+ax=a^2+\frac{7ax}{6}$

4 Solve $2+\sqrt{x-b}=\sqrt{x+3b}$

5 Divide 150 into two such parts that one part shall be 2 less than 7 times the other part.

6 Solve $\begin{cases} \frac{x}{2}-2y-4z=2 \\ \frac{x}{4}+4y+3z=6 \\ x+y-z=7 \end{cases}$

7 Simplify

$4\sqrt{24}-3\sqrt{54}+2\sqrt{6}+\sqrt{\frac{2}{3}}$; $y^n\sqrt[n]{x^{3n}y^{2n}}$; $(a^{\frac{3}{2}}-b^{\frac{3}{2}})\div(a^{\frac{1}{2}}-b^{\frac{1}{2}})$

8 Expand $(a+2b)^n$ to *four* terms, using the binomial theorem.

9 Solve $\begin{cases} x^2+y^2=53 \\ xy=14 \end{cases}$

10 The difference of the squares of two numbers is 16; the square of the difference of the numbers is 4. Find the numbers.

11 If each edge of a cube is decreased 2 feet, the volume of the cube will be decreased 218 cubic feet; find the edge of the first cube.

12 Define *five* of the following: simultaneous quadratics, literal equation, coefficient, monomial, negative term, transposition, involution.