The University of the State of New York

250TH HIGH SCHOOL EXAMINATION

INTERMEDIATE ALGEBRA

Thursday, January 22, 1931 — 9.15 a. m. to 12.15 p. m., only

Instructions

Do not open this sheet until the signal is given.

Answer all questions in part I and five questions from part II.

Part I is to be done first and the maximum time to be allowed for this part is one and one half hours. Merely write the answer to each question in the space at the right; no work need be shown.

If you finish part I before the signal to stop is given you may begin part II. However, it is advisable to look your work over carefully before proceeding to part II, since *no credit will be given any answer in part I which is not correct and reduced to its simplest form.*

When the signal to stop is given at the close of the one and one half hour period, work on part I must cease and this sheet of the question paper must be detached. The sheets will then be collected and you should continue with the remainder of the examination.

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INTERMEDIATE ALGEBRA

Thursday, January 22, 1931

Fill in the following lines:

Name of school_____ Name of pupil_____

Detach this sheet and hand it in at the close of the one and one half hour period.

Part I

Answer all questions in this part. Each question has 2½ credits assigned to it; no partial credit should be allowed. Each answer must be reduced to its simplest form.

1–2 The discriminant of a quadratic equation is 25; state whether the roots are (a) equal or unequal, (b) rational or irrational. Ans. a_____ b_____

3 Find the sum of the roots of $2x^2 - 7 = 3x$ Ans._____

4 Write one of the binomial factors of $x^2 - 7x - 6$ Ans._____

5 If $y = -3x^2$, does y increase or decrease algebraically as x increases from 0? Ans._____

6 Write as a trinomial equal to zero the quadratic equation whose roots are 5 and -3. Ans._____

7 Simplify $\left(\frac{x}{3} - \frac{3}{x}\right) \div \left(\frac{2x-6}{3x}\right)$ Ans._____

8 Find the value of $3^0 - 3^{-2}$ Ans._____

9 Solve the following equation for x:
$x^{\frac{3}{2}} = -8$ Ans._____

10 Rationalize the denominator of $\frac{1+\sqrt{2}}{2+\sqrt{2}}$ Ans._____

11 Solve the following equation for x: $5 - \sqrt{x^2 - 5} = x$ Ans._____

12 Combine into a single term $\sqrt{-16} - 3i$ Ans._____

13 The graph of $x^2 + y^2 = 36$ is a circle; what is its radius? Ans._____

14 Find the value of y for the point in which the graphs of $x + 2y = 14$ and $x = y - 1$ intersect. Ans._____

15 The first term of a geometric progression is 6 and the fourth term is 162; find the ratio. Ans._____

16 Find the 21st term of the progression $-7, -4, -1, \ldots$ Ans._____

17 What fraction added to the product of any two consecutive integers, x and $x + 1$, will produce a perfect trinomial square? Ans._____

18 What is the characteristic of the logarithm of .00842? Ans._____

19 Find the mantissa of the logarithm of 3.814. Ans._____

20 Solve the following formula for b: $V = \frac{a}{6}(b + b' + 4m)$ Ans._____