

The University of the State of New York

320TH HIGH SCHOOL EXAMINATION

ADVANCED ALGEBRA

Tuesday, January 26, 1954 — 9.15 a. m. to 12.15 p. m., only

Instructions

Part I is to be done first and the maximum time allowed for it is one and one half hours. At the end of that time, this part of the examination must be detached and will be collected by the teacher. If you finish part I before the signal to stop is given, you may begin part II.

Write at top of first page of answer paper to part II (a) name of school where you have studied, (b) number of weeks and recitations a week in advanced algebra.

The minimum time requirement is four or five recitations a week for half a school year after the completion of intermediate algebra.

Part II

Answer five questions from part II.

- 21 Solve the equation $2x^4 - x^3 + x^2 - 2x - 6 = 0$ [10]
- 22 Find to the *nearest tenth* the positive root of the equation $x^3 + 6x^2 - 4x - 8 = 0$. [10]
- 23 a Draw the graph of $y = 2^x$ from $x = -2$ to $x = 3$. [6]
b On the same axes used in answer to a, draw the graph of $y = -x + 4$ [2]
c From the graphs made in answer to a and b, estimate to the *nearest tenth* the value of x that satisfies the equation $2^x = -x + 4$ [2]
- 24 Using the formula $Q = Pe^{-nr}$, find Q to the *nearest hundredth* when $P = 760$, $e = 2.718$, $n = 55$ and $r = .14$. [10]
- 25 a State and prove the Remainder Theorem. [5]
b The function $x^3 + mx^2 + nx + 24$ is exactly divisible by $x + 2$, but, when it is divided by $x - 3$, the remainder is 30. Find m and n . [5]
- 26 Find the integral value of k such that one root of the equation $x^3 - 5x^2 - 2x + k = 0$ shall be 5 more than another. [10]
- 27 Tom can paint a wall with a sprayer in 5 hours less time than it takes him to paint it by hand. One day he started the job with the sprayer but after 1 hour and 20 minutes, the sprayer became clogged and he finished the job by hand in 6 hours. How long would it have taken him to do the whole job with the sprayer? [10]

[1]

[OVER]