The University of the State of New York

REGENTS HIGH SCHOOL EXAMINATION

4/29

NINTH YEAR MATHEMATICS

Wednesday, August 14, 1974 — 12:30 to 3:30 p.m., only

The last page of the booklet is the answer sheet. Fold the last page along the perforations and, slowly and carefully, tear off the answer sheet. Then fill in the heading of your answer sheet.

On page 5 you will find the "Tables of Natural Trigonometric Functions" which you may need to answer some questions in this examination. Fold this page along the perforations, and tear it off also slowly and carefully.

DO NOT OPEN THIS EXAMINATION BOOKLET UNTIL THE SIGNAL IS GIVEN

Answer all questions in this part. Each correct answer will receive 2 credits. No partial credit will be allowed. Write your answers in the spaces provided on the separate answer sheet.

- 1 Express as a binomial the sum of 2b + 5, 4b 4,
- 2 If a = -1 and b = -2, find the value of $a^{s}b$.
- 3 What is the numerical value of |5| + |-5|?
- 4 If 1 inch represents 150 miles on a map, then how many inches will represent 600 miles?
- 5 Solve for $p: \frac{p+2}{12} = \frac{3}{4}$
- 6 Solve for x: .02x + .12 = .20
- 7 Solve for x: 7x 3 = 4x + 6
- 8 Solve for x: 3(x + 4) = 9
- 9 Perform the indicated operation: $(2x^2 + 7x - 15) \div (x + 5)$
- 10 One number is twice another number, and their sum is 42. What is the *smaller* number?
- 11 From $7a^2 3a + 2$ subtract $4a^2 4a 5$.
- 12 Factor: $x^2 10x + 9$
- 13 Find the square root of 55 to the nearest tenth.
- 14 If 15% of a number is 3, what is the number?
- 15 Express in lowest terms: $\frac{3b-12}{15}$
- 16 If a side of a square is represented by x + 1, express the perimeter of the square in terms of x.
- 17 Express as a single fraction in lowest terms:

$$\frac{2}{x} + \frac{1}{2x}$$

18 If $\cos A = .6435$, find angle A to the nearest degree.

Directions (19-30): Write in the space provided on the separate answer sheet the numeral preceding the expression that best completes each statement or answers each question.

- 19 If 3 less than 5 times a number is 17, then which equation can be used to find the number?

- (1) 3 5x = 17(2) 3x 5 = 17(3) 5x 3 = 17(4) 5x + 3 = 17
- 20 The reciprocal of $\frac{1}{5}$ is
 - (1) 1

- (3) -5
- $(2) -\frac{1}{r}$
- (4) 5
- 21 The expression 3(a + b) + 6(2a + 3b) is equiva-
 - (1) 15a + 21b
- (2) 15a + 4b
- $\begin{array}{c} (3) \ 9(3a + 4b) \\ (4) \ 3a + 4b + 9 \end{array}$
- 22 Which ordered pair is the solution of the following system of equations?

$$2x + y = 7
x - y = 2$$

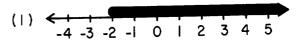
- (3) (3,1) (4) (5,-3)
- 23 The product of $4x^4$ and $5x^4$ is
- $\begin{array}{ccc}
 (1) & 9x^8 \\
 (2) & 20x^4
 \end{array}$
- $(3) 20x^8$ $(4) 20x^{16}$
- 24 When $9y^3 + 6y^2 + 3y$ is divided by 3y, the quotient

 - (1) $3y^2 + 2y$ (2) $3y^2 + 2y + 1$ (3) $3y^2 + 2y + y$ (4) $9y^3 + 6y^2$
- 25 The inequality 4x 1 < 19 is equivalent to
 - $\begin{array}{cccc} (1) & x & < 4 \\ (2) & x & < 5 \end{array}$

- (3) x > 5 (4) x > -5
- 26 Expressed in simplest form, $\sqrt{7} + \sqrt{28}$ equals
 - (1) $\sqrt{35}$
- (3) $3\sqrt{7}$
- (2) $5\sqrt{7}$
- 27 If ab + c = 2, is solved for a, then a is equal to
 - (1) bc -2
- (3) $\frac{c+2}{h}$
- (2) 2 c b
- (4) $\frac{2-c}{h}$

- 28 The graph of the equation 2x 3y = 6 intersects the y-axis at the point whose coordinates are
 - (1) (--2,0)
- (3) (0,3)
- (2) (0,-2)
- (4) (3,0)
- 29 Which is the solution set of the equation $x^2 + x - 6 = 0?$
 - (1) {—2,—3} (2) {—2,3}
- (3) {2,—3} (4) {2,3}

30 Which graph shows the solution set of the inequality $2x \geq -4$?



- -4 -3 -2 -1 0 1 2 3 4
- 2 3 4 -4 -3 -2 -1
- 2 3 4 5 0 1 -4 -3 -2 -l

Answers to the following questions are to be written on paper provided by the school.

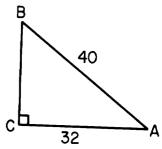
Part II

Answer four questions from this part. Show all work unless otherwise directed.

- 31 a Graph the solution set of the following system of inequalities: $x + y \le 4$ [8] y > 2x
 - b State the coordinates of one point in the solution set. [2]
- 32 The second of three numbers is twice the first. The third number is four more than three times the first. If the sum of the three numbers is 76, find the three numbers. [Only an algebraic solution will be accepted.] [6,4]
- 33 Write an equation or a system of equations that can be used to solve *each* of the following problems. In each case state what the variable or variables represent. [Solution of the equations is not required.]
 - a At a high school game, students paid \$.35 admission and adults \$.50. If 175 people were in attendance, and the receipts were \$72.50, how many students and how many adults attended the game? [5]
 - b The length of a rectangle is 6 inches more than its width. The area of the rectangle is equal to the area of a square whose side is 4 inches. Find the width of the rectangle. [5]
- 34 Answer both a and b.
 - a Solve for x and check: $\frac{3x}{4} \frac{2x}{3} = \frac{1}{2}$ [3,1]
 - b Solve the system of equations for x and y and check:

$$\begin{array}{r}
 x + 4y = 6 \\
 9x - 4y = 14
 \end{array}$$
[4,2]

35 As shown in the diagram, a 40-foot ladder is leaning against a house. The foot of the ladder is 32 feet from the house.



- a Find to the nearest degree the measure of $\angle A$, the angle the ladder makes with the ground. [5]
- b Find to the nearest foot the distance BC from the top of the ladder to the ground. [5]
- 36 A person has \$10,000 invested, part at 8% and part at 6%. The income from the 8% investment is \$240 more than the income from the 6% investment. How much is invested at *each* rate? [5,5]
- 37 Below are five statements. Each can be correctly completed by filling in *one and only* one of the following numbers: —1, 0, 1. On your answer paper, write the letters a through e and next to each write the correct number chosen from the numbers given above. [10]
 - a The equation x = |-1| is true when x is
 - b The smaller of the two roots of the equation $x^2 = x$ is
 - c The smaller of the two roots of the equation $x^2 = 1$ is
 - d The solution of the equation 3x + 1 = 2x + 1 is
 - e The solution of the equation $\frac{x+1}{x} = 2$ is

THE UNIVERSITY OF THE STATE OF NEW YORK THE STATE EDUCATION DEPARTMENT

BUREAU OF ELEMENTARY AND SECONDARY EDUCATIONAL TESTING

Tables of Natural Trigonometric Functions (For use with 9th and 10th Year Mathematics Regents Examinations)

(1 of use with the and 10th 1 ear Mathematics Regents Examinations)							
Angle	Sine	Cosine	Tangent	Angle	Sine	Cosine	Tangent
1°	.0175	.9998	.0175	46°	.7193	.6947	1.0355
2°	.0349	.9994	.0349	47°	.7314	.6820	1.0724
3°	.0523	.9986	.0524	48°	.7431	.6691	1.1106
4°	.0698	.9976	.0699	49°	.7547	.6561	1.1504
5°	.0872	.9962	.0875	50°	.7660	.6428	1.1918
6°	.1045	.9945	.1051	51°	.7771	.6293	1.2349
7°	.1219	.9925	.1228	52°	.7880	.6157	1.2799
8°	.1392	.9903	.1405	53°	.7986	.6018	1.3270
9°	.1564	.9877	.1584	54°	.8090	.5878	1.3764
10°	.1736	.9848	.1763	55°	.8192	.5736	1.4281
11°	.1908	.9816	.1944	56°	.8290	.5592	1.4826
12°	.2079	.9781	.2126	57°	.8387	.5446	1.5399
13°	.2250	.9744	.2309	58°	.8480	.5299	1.6003
14°	.2419	.9703	.2493	59°	.8572	.5150	1.6643
15°	.2588	.9659	.2679	60°	.8660	.5000	1.7321
16°	.2756	.9613	.2867	61°	.8746	.4848	1.8040
17°	.2924	.9563	.3057	62°	.8829	.4695	1.8807
18°	.3090	.9511	.3249	63°	.8910	.4540	1.9626
19°	.3256	.9455	.3443	64°	.8988	.4384	2.0503
20°	.3420	.9397	.3640	65°	.9063	.4226	2.1445
21°	.3584	.9336	.3839	66°	.9135	.4067	2.2460
22°	.3746	.9272	.4040	67°	.9205	.3907	2.3559
23°	.3907	.9205	.4245	68°	.9272	.3746	2.4751
24°	.4067	.9135	.4452	69°	.9336	.3584	2.6051
25°	.4226	.9063	.4663	70°	.9397	.3420	2.7475
26°	.4384	.8988	.4877	71°	.9455	.3256	2.9042
27°	.4540	.8910	.5095	72°	.9511	.3090	3.0777
28°	.4695	.8829	.5317	73°	.9563	.2924	3.2709
29°	.4848	.8746	.5543	74°	.9613	.2756	3.4874
30°	.5000	.8660	.5774	75°	.9659	.2588	3.7321
31°	.5150	.8572	.6009	76°	.9703	.2419	4.0108
32°	.5299	.8480	.6249	77°	.9744	.2250	4.3315
33°	.5446	.8387	.6494	78°	.9781	.2079	4.7046
34°	.5592	.8290	.6745	79°	.9816	.1908	5.1446
35°	.5736	.8192	.7002	80°	.9848	.1736	5.6713
36°	.5878	.8090	.7265	81°	.9877	.1564	6.3138
37°	.6018	.7986	.7536	82°	.9903	.1392	7.1154
38°	.6157	.7880	.7813	83°	.9925	.1219	8.1443
39°	.6293	.7771	.8098	84°	.9945	.1045	9.5144
40°	.6428	.7660	.8391	85°	.9962	.0872	11.4301
41° 42° 43° 44° 45°	.6561 .6691 .6820 .6947 .7071	.7547 .7431 .7314 .7193 .7071	.8693 .9004 .9325 .9657 1.0000	86° 87° 88° 89° 90°	.9976 .9986 .9994 .9998 1.0000	.0698 .0523 .0349 .0175 .0000	14.3007 19.0811 28.6363 57.2900

Part I Score:
Rater's Initials:

The University of the State of New York

REGENTS HIGH SCHOOL EXAMINATION

NINTH YEAR MATHEMATICS

Wednesday, August 14, 1974—12:30 to 3:30 p.m., only

ANSWER SHEET

Pupil	Teacher						
School		Grade					
Your answers	to Part I should be recorded on this	answer sheet.					
Part I Answer all questions in this part.							
1	11	21					
2	12	22					
3	13	23					
4	14	24					
5	15	25					
6	16	26					
7	17	27					
8	18	28					
9	19	29					
10	20	30					

Your answers for Part II should be placed on paper provided by the school.

FOR TEACHERS ONLY

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NINTH YEAR MATHEMATICS

Wednesday, August 14, 1974 - 12:30 to 3:30 p.m., only

Just before the start of the examination period, distribute one examination booklet, face up, to each pupil. Instruct the pupils to read the directions on the cover of the examination booklet, detach the answer sheet and reference tables, and fill in the heading on their answer sheet. When each pupil has received a booklet and finished filling in the heading of the answer sheet, instruct the pupils to open their examination booklets and begin work.

Use only red ink or red pencil in rating Regents papers. Do not attempt to correct the pupil's work by making insertions or changes of any kind. Use checkmarks to indicate pupil errors.

Unless otherwise specified, mathematically correct variations in the answers will be allowed. Units need not be given when the wording of the questions allows such omissions.

SCORING KEY

Part I

Allow 2 credits for each correct answer; allow no partial credit. For questions 19-30, allow credit if the pupil has written the correct answer instead of the number 1, 2, 3, or 4.

$$(1) 9b - 5$$

$$(11) \ 3a^2 + a + 7$$

(12)
$$(x-9)(x-1)$$

$$(3)$$
 10

$$(23) \ 3$$

$$(15) \frac{b-4}{5}$$

$$(16) 4x + 4$$

$$(17) \frac{5}{2x}$$

$$(8) -1$$

(9)
$$2x - 3$$

$$(19) \ 3$$

NINTH YEAR MATHEMATICS - concluded

Part II

Please refer to the Department's pamphlet Suggestions on the Rating of Regents Examination Papers in Mathematics. Care should be exercised in making deductions as to whether the error is purely a mechanical one or due to a violation of some principle. A mechanical error generally should receive a deduction of 10 percent, while an error due to a violation of some cardinal principle should receive a deduction ranging from 30 percent to 50 percent, depending on the relative importance of the principle in the solution of the problem.

(33) a let
$$x$$
 = number of students
 $.35x + .50 (175 - x) = 72.50$ [5]
b let x = number of inches in width
 $x(x + 6) = 16$ [5]

(34)
$$a \ 6 \quad [3]$$
Check [1]
$$b \ x = 2$$

$$y = 1$$
Check [2]