The University of the State of New York

REGENTS HIGH SCHOOL EXAMINATION

NINTH YEAR MATHEMATICS

Wednesday, August 13, 1975 — 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.

When you have completed the examination, you must sign the statement printed at the end of the answer paper, indicating that you had no unlawful knowledge of the questions or answers prior to the examination and that you have neither given nor received assistance in answering any of the questions during the examination. Your answer paper cannot be accepted if you fail to sign this declaration.

DO NOT OPEN THIS EXAMINATION BOOKLET UNTIL THE SIGNAL IS GIVEN

Part I

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 What is the reciprocal of $\frac{3}{2}$?

2 Solve for t: $6(t + 2) = 36$

3 If $\cos x = .8712$, find the measure of angle x to the *nearest degree*.

4 The length of a rectangle is 15 and its width is represented by w. Express the area of the rectangle in terms of w.

5 Express the product $(a - 5)(a + 3)$ as a trinomial.

6 Solve for x: $.2x + 3 = 9$

7 A board which is 36 inches long is cut into two pieces. One piece is 6 inches longer than the other piece. What is the length, in inches, of the *shorter* piece?

8 Factor: $x^2 + 6x + 8$

9 Find the *positive* square root of 90 to the *nearest tenth*.

10 Express the fraction $\frac{x^2 - 25}{x - 5}$ in *simplest form*.

11 From $4x^2 - 2x + 3$, subtract $2x^2 - 2x$.

12 Express as a single fraction:

$$\frac{x}{2} + \frac{2x - y}{6}$$

13 Find the y-intercept of the graph of the equation $y = -2x + 5$.

14 Solve this system of equations for x:

$$3x - y = 3$$
$$3x + y = 9$$

15 Find the solution set for

$$\frac{x - 1}{3} = \frac{x + 2}{6}.$$

16 Express the product $-4a(3a - 7)$ as a binomial.

17 If the replacement set for x is $\{0, 1, 2\}$, what is the solution set of the inequality $3x + 1 > 5$?

18 Two numbers are in the ratio 1:7 and their sum is 48. What is the *smaller* number?

19 If 11% of a number is 55, what is the number?

Directions (20–30): Write in the space provided on the separate answer sheet the *numeral* preceding the expression that best completes *each* statement or answers *each* question.

20 The quotient of $(-\frac{5}{8}) \div \frac{1}{2}$ is

(1) $-\frac{5}{16}$ (3) $-\frac{4}{5}$

(2) $-\frac{2}{5}$ (4) $-\frac{5}{4}$

21 The product of $5x^4$ and $3x^3$ is

(1) $8x^7$ (3) $15x^7$

(2) $8x^{12}$ (4) $15x^{12}$

22 The set $\{+2, -2\}$ is the solution set of

(1) $x^2 - 4 = 0$ (3) $5x = -10$

(2) $(x + 2)^2 = 0$ (4) $2x > 2$

23 When $x^2 - x$ is divided by x, the quotient is

(1) x (3) $x - 1$

(2) x^2 (4) $x^2 - 1$

24 The value of $|-3| - |-4| + |5|$ is

(1) 12 (3) -2

(2) 6 (4) 4

25 The lines whose equations are $x = 4$ and $y = -3$ intersect at the point

(1) $(4,0)$ (3) $(-3,4)$

(2) $(0,-3)$ (4) $(4,-3)$

26 Using the formula $K = \frac{1}{2}h(a + b)$, what is K if $h = 6$, $a = 13$, and $b = 3$?

(1) 24
(2) 42
(3) 48
(4) 96

27 The sum of $4\sqrt{3}$ and $\sqrt{27}$ is

(1) $7\sqrt{3}$
(2) $13\sqrt{3}$
(3) $4\sqrt{30}$
(4) $5\sqrt{30}$

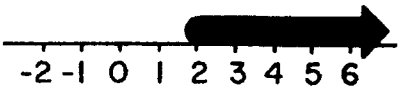
28 If $A = \frac{bh}{2}$, then h equals

(1) $A - \frac{b}{2}$
(2) $\frac{2A}{b}$
(3) $2A - b$
(4) $2Ab$

29 If x represents the smallest of three consecutive even integers, the average of the three integers can be represented by

(1) $x + 2$
(2) $x + 6$
(3) $3x + 2$
(4) $3x + 6$

30 The solution set of which inequality is shown in the accompanying graph?



(1) $x > 2$
(2) $x \geq 2$
(3) $x < 2$
(4) $x \leq 2$

☞ GO RIGHT ON TO THE NEXT PAGE.

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 Answer *either* *a* or *b*, but *not* both.

a Solve graphically and check:

$$\begin{aligned} y &= 2x \\ x + y &= 6 \end{aligned} \qquad [8,2]$$

OR

b Graph the solution set of the following system of inequalities and label the solution set *A*:

$$\begin{aligned} x + y &> 5 \\ y &\leq 2x - 4 \end{aligned} \qquad [8,2]$$

32 Answer *both* *a* and *b*.

a Find the roots of the equation:

$$x + \frac{3}{x} = 4 \qquad [6]$$

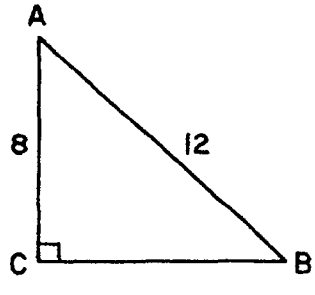
b Express as a single fraction in *simplest form*:

$$\frac{4x - 1}{2} + \frac{3x + 1}{6} \qquad [4]$$

33 Tickets to the school play cost \$2 for students and \$3 for adults. A total of \$900 was collected for 350 tickets. How many tickets of *each* kind were sold? [*Only an algebraic solution will be accepted.*] [4,6]

34 The length of a rectangle is 7 more than twice its width. If the perimeter of the rectangle is 50, find its length and width. [*Only an algebraic solution will be accepted.*] [5,5]

35 In right triangle *ABC*, angle *C* is a right angle, *AC* is 8, and *AB* is 12.



a Find, to the *nearest degree*, the measure of angle *A*. [5]

b Find *BC* to the *nearest integer*. [5]

36 A man on a trip traveled at an average rate of 40 mph. His son left on the same trip one hour later, traveling at the rate of 50 mph. How many hours will it take the son to overtake his father? [*Only an algebraic solution will be accepted.*] [5,5]

37 Write the letters *a*,*b*,*c*,*d*, and *e* on your answer paper, and after *each* letter write the answer to the corresponding question below. [10]

a What is the multiplicative inverse of $\frac{4}{3}$?

b What is the additive inverse of -2?

c What is the number of significant digits in the numeral 3.012?

d What is the solution set of $|x| = 3$?

e If the replacement set is the set of positive integers, what is the solution set of $3x = -6$?

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)

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°	.6561	.7547	.8693	86°	.9976	.0698	14.3007
42°	.6691	.7431	.9004	87°	.9986	.0523	19.0811
43°	.6820	.7314	.9325	88°	.9994	.0349	28.6363
44°	.6947	.7193	.9657	89°	.9998	.0175	57.2900
45°	.7071	.7071	1.0000	90°	1.0000	.0000	

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REGENTS HIGH SCHOOL EXAMINATION

NINTH YEAR MATHEMATICS

Wednesday, August 13, 1975 — 12:30 to 3:30 p.m., only

Part I Score: .....
Rater's Initials:
.....

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.

The declaration below should be signed when you have completed the examination.

I do hereby affirm, at the close of this examination, that I had no unlawful knowledge of the questions or answers prior to the examination, and that I have neither given nor received assistance in answering any of the questions during the examination.

_____

Signature

FOR TEACHERS ONLY

SCORING KEY

9

NINTH YEAR MATHEMATICS

Wednesday, August 13, 1975 — 12:30 to 3:30 p.m., only

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.

Part I

Allow 2 credits for each correct answer; allow no partial credit. For questions 20–30, allow credit if the pupil has written the correct answer instead of the number 1, 2, 3, or 4.

(1) $\frac{2}{3}$

(2) 4

(3) 29

(4) $15w$

(5) $a^2 - 2a - 15$

(6) 30

(7) 15

(8) $(x + 4)(x + 2)$

(9) 9.5

(10) $x + 5$

(11) $2x^2 + 3$

(12) $\frac{5x - y}{6}$

(13) 5

(14) 2

(15) 4

(16) $-12a^2 + 28a$

(17) 2

(18) 6

(19) 500

(20) 4

(21) 3

(22) 1

(23) 3

(24) 4

(25) 4

(26) 3

(27) 1

(28) 2

(29) 1

(30) 2

[OVER]

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.

(32) *a* 1,3 [6]

b $\frac{15x - 2}{6}$ [4]

(33) Analysis [4]
150 students
200 adults [6]

(34) Analysis [5]
6,19 [5]

(35) *a* 48 [5]
b 9 [5]

(36) Analysis [5]
4 [5]

(37) *a* $\frac{3}{4}$ [2]
b 2 [2]
c 4 [2]
d {3,−3} [1,1]
e { } [2]