The University of the State of New York

REGENTS HIGH SCHOOL EXAMINATION

ALGEBRA 2/TRIGONOMETRY

Wednesday, January 23, 2013 — 1:15 to 4:15 p.m., only

Student Name:_____

School Name:_____

The possession or use of any communications device is strictly prohibited when taking this examination. If you have or use any communications device, no matter how briefly, your examination will be invalidated and no score will be calculated for you.

Print your name and the name of your school on the lines above.

A separate answer sheet for Part I has been provided to you. Follow the instructions from the proctor for completing the student information on your answer sheet.

This examination has four parts, with a total of 39 questions. You must answer all questions in this examination. Record your answers to the Part I multiple-choice questions on the separate answer sheet. Write your answers to the questions in Parts II, III, and IV directly in this booklet. All work should be written in pen, except for graphs and drawings, which should be done in pencil. Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc.

The formulas that you may need to answer some questions in this examination are found at the end of the examination. This sheet is perforated so you may remove it from this booklet.

Scrap paper is not permitted for any part of this examination, but you may use the blank spaces in this booklet as scrap paper. A perforated sheet of scrap graph paper is provided at the end of this booklet for any question for which graphing may be helpful but is not required. You may remove this sheet from this booklet. Any work done on this sheet of scrap graph paper will *not* be scored.

When you have completed the examination, you must sign the statement printed at the end of the answer sheet, 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 sheet cannot be accepted if you fail to sign this declaration.

Notice…

A graphing calculator and a straightedge (ruler) must be available for you to use while taking this examination.

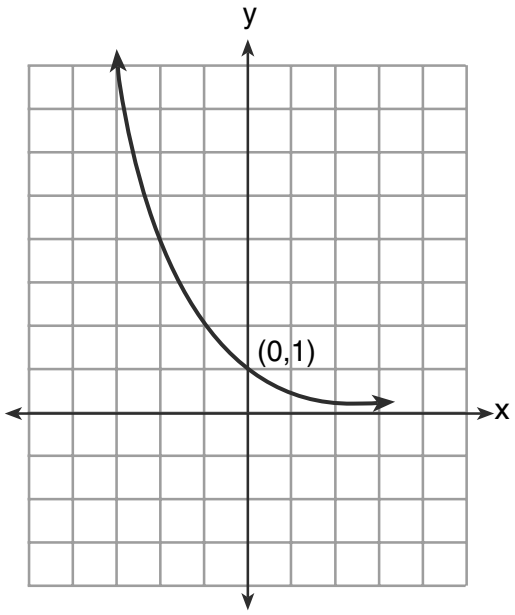
DO NOT OPEN THIS EXAMINATION BOOKLET UNTIL THE SIGNAL IS GIVEN.

Part I

Answer all 27 questions in this part. Each correct answer will receive 2 credits. No partial credit will be allowed. For each statement or question, choose the word or expression that, of those given, best completes the statement or answers the question. Record your answers on your separate answer sheet. [54]

Use this space for computations.

1 What is the equation of the graph shown below?



(1) $y = 2^x$

(2) $y = 2^{-x}$

(3) $x = 2^y$

(4) $x = 2^{-y}$

2 Which ordered pair is a solution of the system of equations shown below?

$$x + y = 5$$
$$(x + 3)^2 + (y - 3)^2 = 53$$

(1) (2,3)

(2) (5,0)

(3) (−5,10)

(4) (−4,9)

Use this space for computations.

3 The relationship between t, a student's test scores, and d, the student's success in college, is modeled by the equation $d = 0.48t + 75.2$. Based on this linear regression model, the correlation coefficient could be

(1) between -1 and 0
(2) between 0 and 1
(3) equal to -1
(4) equal to 0

4 What is the common ratio of the geometric sequence shown below?

$$-2, 4, -8, 16, \ldots$$

(1) $-\frac{1}{2}$
(2) 2
(3) -2
(4) -6

5 Given the relation $\{(8,2), (3,6), (7,5), (k,4)\}$, which value of k will result in the relation *not* being a function?

(1) 1
(2) 2
(3) 3
(4) 4

6 Which expression is equivalent to $(9x^2y^6)^{-\frac{1}{2}}$?

(1) $\frac{1}{3xy^3}$
(2) $3xy^3$
(3) $\frac{3}{xy^3}$
(4) $\frac{xy^3}{3}$

Use this space for computations.

7 In a certain high school, a survey revealed the mean amount of bottled water consumed by students each day was 153 bottles with a standard deviation of 22 bottles. Assuming the survey represented a normal distribution, what is the range of the number of bottled waters that approximately 68.2% of the students drink?

(1) 131–164
(2) 131–175
(3) 142–164
(4) 142–175

8 What is the fourth term in the binomial expansion $(x - 2)^8$?

(1) $448x^5$
(2) $448x^4$
(3) $-448x^5$
(4) $-448x^4$

9 Which value of k satisfies the equation $8^{3k+4} = 4^{2k-1}$?

(1) -1
(2) $-\frac{9}{4}$
(3) -2
(4) $-\frac{14}{5}$

10 There are eight people in a tennis club. Which expression can be used to find the number of different ways they can place first, second, and third in a tournament?

(1) ${}_8P_3$
(2) ${}_8C_3$
(3) ${}_8P_5$
(4) ${}_8C_5$

Use this space for computations.

11 If $\sin A = \frac{1}{3}$, what is the value of $\cos 2A$?

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

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

(3) $-\frac{7}{9}$

(4) $\frac{7}{9}$

12 In the interval $0° \leq x < 360°$, $\tan x$ is undefined when x equals

(1) $0°$ and $90°$

(2) $90°$ and $180°$

(3) $180°$ and $270°$

(4) $90°$ and $270°$

13 If $f(x) = \sqrt{9 - x^2}$, what are its domain and range?

(1) domain: $\{x | -3 \leq x \leq 3\}$; range: $\{y | 0 \leq y \leq 3\}$

(2) domain: $\{x | x \neq \pm 3\}$; range: $\{y | 0 \leq y \leq 3\}$

(3) domain: $\{x | x \leq -3 \text{ or } x \geq 3\}$; range: $\{y | y \neq 0\}$

(4) domain: $\{x | x \neq 3\}$; range: $\{y | y \geq 0\}$

14 When $x^2 + 3x - 4$ is subtracted from $x^3 + 3x^2 - 2x$, the difference is

(1) $x^3 + 2x^2 - 5x + 4$

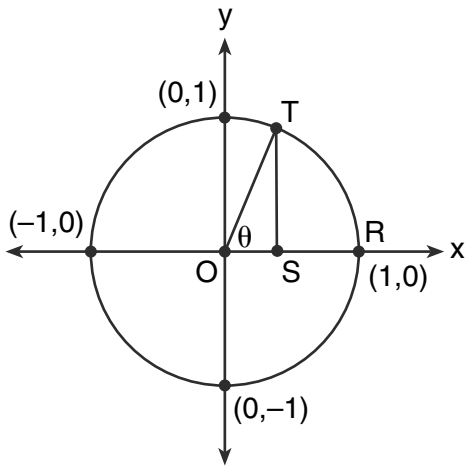
(2) $x^3 + 2x^2 + x - 4$

(3) $-x^3 + 4x^2 + x - 4$

(4) $-x^3 - 2x^2 + 5x + 4$

Use this space for computations.

15 In the diagram below, the length of which line segment is equal to the exact value of sin θ?



(1) $\overline{TO}$
(2) $\overline{TS}$
(3) $\overline{OR}$
(4) $\overline{OS}$

16 The area of triangle ABC is 42. If $AB = 8$ and $m\angle B = 61$, the length of $\overline{BC}$ is approximately

(1) 5.1
(2) 9.2
(3) 12.0
(4) 21.7

17 When factored completely, the expression $3x^3 - 5x^2 - 48x + 80$ is equivalent to

(1) $(x^2 - 16)(3x - 5)$
(2) $(x^2 + 16)(3x - 5)(3x + 5)$
(3) $(x + 4)(x - 4)(3x - 5)$
(4) $(x + 4)(x - 4)(3x - 5)(3x - 5)$

Use this space for computations.

18 The value of $\sin(180 + x)$ is equivalent to

(1) $-\sin x$

(2) $-\sin(90 - x)$

(3) $\sin x$

(4) $\sin(90 - x)$

19 The sum of $\sqrt[3]{6a^4b^2}$ and $\sqrt[3]{162a^4b^2}$, expressed in simplest radical form, is

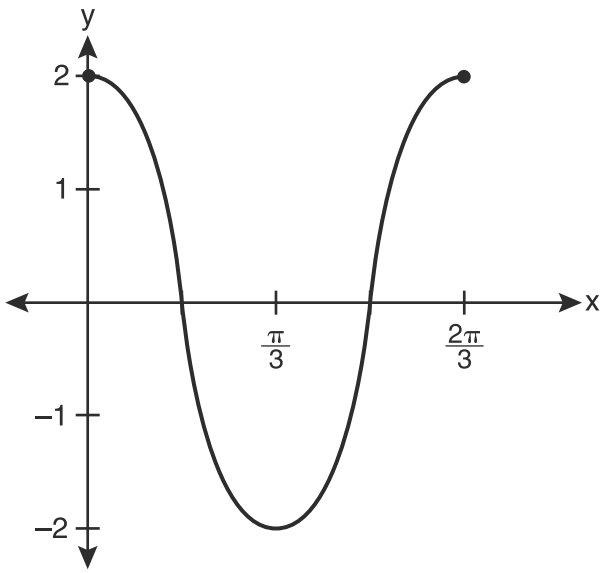
(1) $\sqrt[6]{168a^8b^4}$

(2) $2a^2b\sqrt[3]{21a^2b}$

(3) $4a\sqrt[3]{6ab^2}$

(4) $10a^2b\sqrt[3]{8}$

20 Which equation is represented by the graph below?



(1) $y = 2\cos 3x$

(2) $y = 2\sin 3x$

(3) $y = 2\cos \frac{2\pi}{3}x$

(4) $y = 2\sin \frac{2\pi}{3}x$

Use this space for computations.

21 The quantities p and q vary inversely. If $p = 20$ when $q = -2$, and $p = x$ when $q = -2x + 2$, then x equals

(1) -4 and 5

(2) $\frac{20}{19}$

(3) -5 and 4

(4) $-\frac{1}{4}$

22 What is the solution set of the equation $-\sqrt{2}\sec x = 2$ when $0° \leq x < 360°$?

(1) {45°, 135°, 225°, 315°}

(2) {45°, 315°}

(3) {135°, 225°}

(4) {225°, 315°}

23 The discriminant of a quadratic equation is 24. The roots are

(1) imaginary

(2) real, rational, and equal

(3) real, rational, and unequal

(4) real, irrational, and unequal

24 How many different six-letter arrangements can be made using the letters of the word "TATTOO"?

(1) 60

(2) 90

(3) 120

(4) 720

Use this space for computations.

25 Expressed in simplest form, $\frac{3y}{2y-6} + \frac{9}{6-2y}$ is equivalent to

(1) $\frac{-6y^2+36y-54}{(2y-6)(6-2y)}$

(2) $\frac{3y-9}{2y-6}$

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

(4) $-\frac{3}{2}$

26 If $\log 2 = a$ and $\log 3 = b$, the expression $\log \frac{9}{20}$ is equivalent to

(1) $2b - a + 1$

(2) $2b - a - 1$

(3) $b^2 - a + 10$

(4) $\frac{2b}{a+1}$

27 The expression $(x + i)^2 - (x - i)^2$ is equivalent to

(1) 0

(2) -2

(3) $-2 + 4xi$

(4) $4xi$

Part II

Answer all 8 questions in this part. Each correct answer will receive 2 credits. Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc. For all questions in this part, a correct numerical answer with no work shown will receive only 1 credit. All answers should be written in pen, except for graphs and drawings, which should be done in pencil. [16]

28 Determine the sum of the first twenty terms of the sequence whose first five terms are 5, 14, 23, 32, and 41.

29 Determine the sum and the product of the roots of $3x^2 = 11x - 6$.

30 If $\sec (a + 15)^\circ = \csc (2a)^\circ$, find the smallest positive value of a, in degrees.

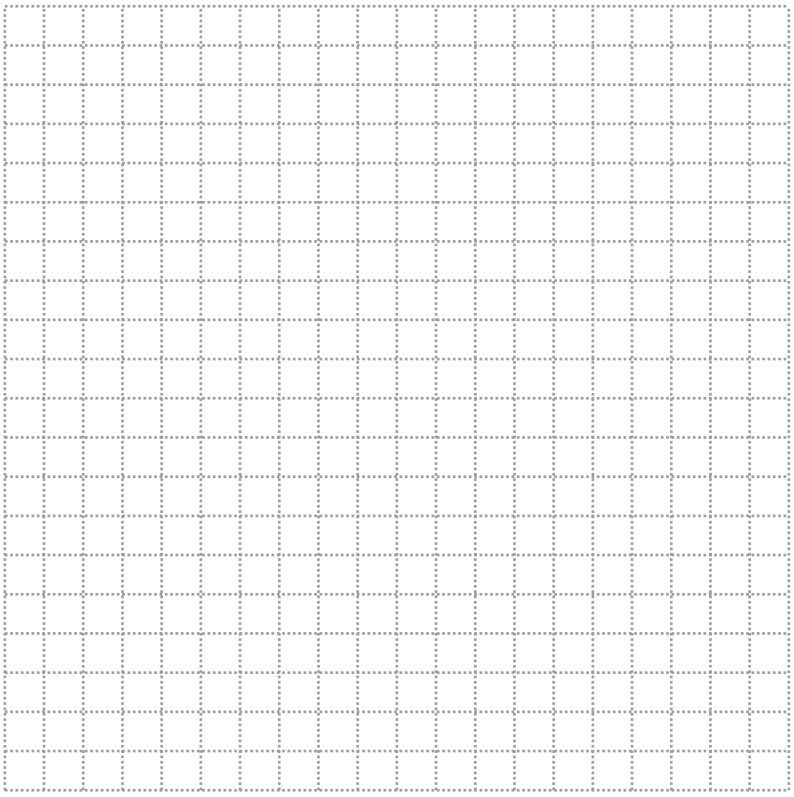
31 The heights, in inches, of 10 high school varsity basketball players are 78, 79, 79, 72, 75, 71, 74, 74, 83, and 71. Find the interquartile range of this data set.

32 Solve the equation $6x^2 - 2x - 3 = 0$ and express the answer in simplest radical form.

33 The number of bacteria present in a Petri dish can be modeled by the function $N = 50e^{3t}$, where N is the number of bacteria present in the Petri dish after t hours. Using this model, determine, to the *nearest hundredth*, the number of hours it will take for N to reach 30,700.

34 Determine the solution of the inequality $|3 - 2x| \geq 7$.

[The use of the grid below is optional.]



35 Convert 3 radians to degrees and express the answer to the *nearest minute*.

Part III

Answer all 3 questions in this part. Each correct answer will receive 4 credits. Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc. For all questions in this part, a correct numerical answer with no work shown will receive only 1 credit. All answers should be written in pen, except for graphs and drawings, which should be done in pencil. [12]

36 Solve algebraically for all values of x:

$$\log_{(x+4)}(17x - 4) = 2$$

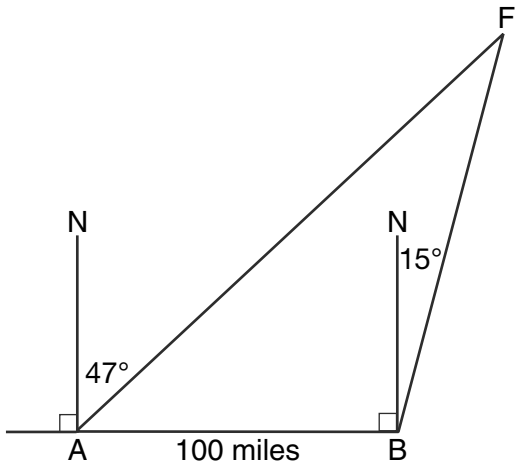
37 The data collected by a biologist showing the growth of a colony of bacteria at the end of each hour are displayed in the table below.

Time, hour, (x)	0	1	2	3	4	5
Population (y)	250	330	580	800	1650	3000

Write an exponential regression equation to model these data. Round *all* values to the *nearest thousandth*.

Assuming this trend continues, use this equation to estimate, to the *nearest ten*, the number of bacteria in the colony at the end of 7 hours.

38 As shown in the diagram below, fire-tracking station *A* is 100 miles due west of fire-tracking station *B*. A forest fire is spotted at *F*, on a bearing 47° northeast of station *A* and 15° northeast of station *B*. Determine, to the *nearest tenth of a mile*, the distance the fire is from *both* station *A* and station *B*. [N represents due north.]



Part IV

Answer the question in this part. A correct answer will receive 6 credits. Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc. A correct numerical answer with no work shown will receive only 1 credit. The answer should be written in pen. [6]

39 Solve algebraically for x: $\sqrt{x^2 + x - 1} + 11x = 7x + 3$

Tear Here

Reference Sheet

Area of a Triangle

$$K = \frac{1}{2}ab \sin C$$

Functions of the Sum of Two Angles

$$\sin (A + B) = \sin A \cos B + \cos A \sin B$$
$$\cos (A + B) = \cos A \cos B - \sin A \sin B$$
$$\tan (A + B) = \frac{\tan A + \tan B}{1 - \tan A \tan B}$$

Functions of the Difference of Two Angles

$$\sin (A - B) = \sin A \cos B - \cos A \sin B$$
$$\cos (A - B) = \cos A \cos B + \sin A \sin B$$
$$\tan (A - B) = \frac{\tan A - \tan B}{1 + \tan A \tan B}$$

Law of Sines

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

Sum of a Finite Arithmetic Series

$$S_n = \frac{n(a_1 + a_n)}{2}$$

Binomial Theorem

$$(a + b)^n = {}_nC_0a^nb^0 + {}_nC_1a^{n-1}b^1 + {}_nC_2a^{n-2}b^2 + \ldots + {}_nC_na^0b^n$$
$$(a + b)^n = \sum_{r=0}^{n} {}_nC_r a^{n-r}b^r$$

Law of Cosines

$$a^2 = b^2 + c^2 - 2bc \cos A$$

Functions of the Double Angle

$$\sin 2A = 2 \sin A \cos A$$
$$\cos 2A = \cos^2 A - \sin^2 A$$
$$\cos 2A = 2 \cos^2 A - 1$$
$$\cos 2A = 1 - 2 \sin^2 A$$
$$\tan 2A = \frac{2 \tan A}{1 - \tan^2 A}$$

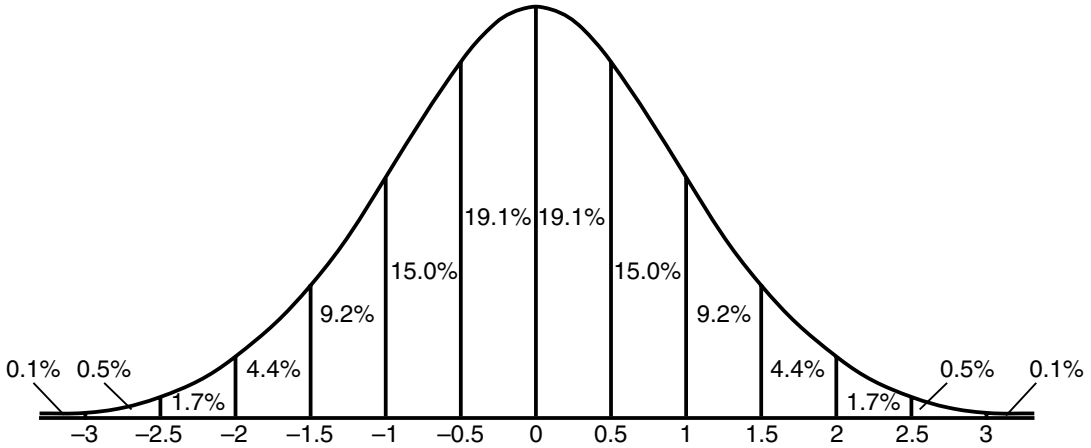
Functions of the Half Angle

$$\sin \frac{1}{2}A = \pm\sqrt{\frac{1 - \cos A}{2}}$$
$$\cos \frac{1}{2}A = \pm\sqrt{\frac{1 + \cos A}{2}}$$
$$\tan \frac{1}{2}A = \pm\sqrt{\frac{1 - \cos A}{1 + \cos A}}$$

Sum of a Finite Geometric Series

$$S_n = \frac{a_1(1 - r^n)}{1 - r}$$

Normal Curve
Standard Deviation



Tear Here

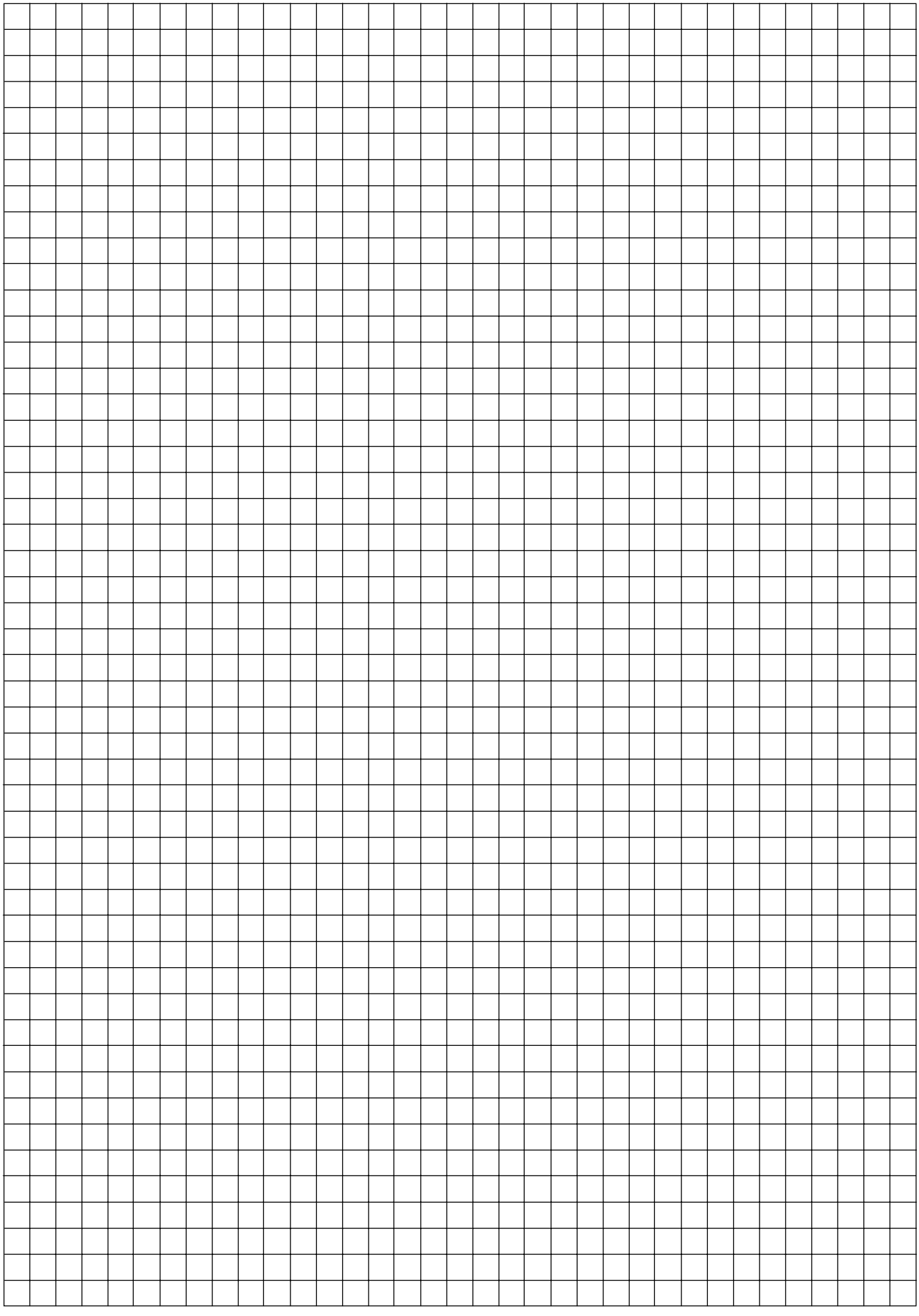
Tear Here

Tear Here

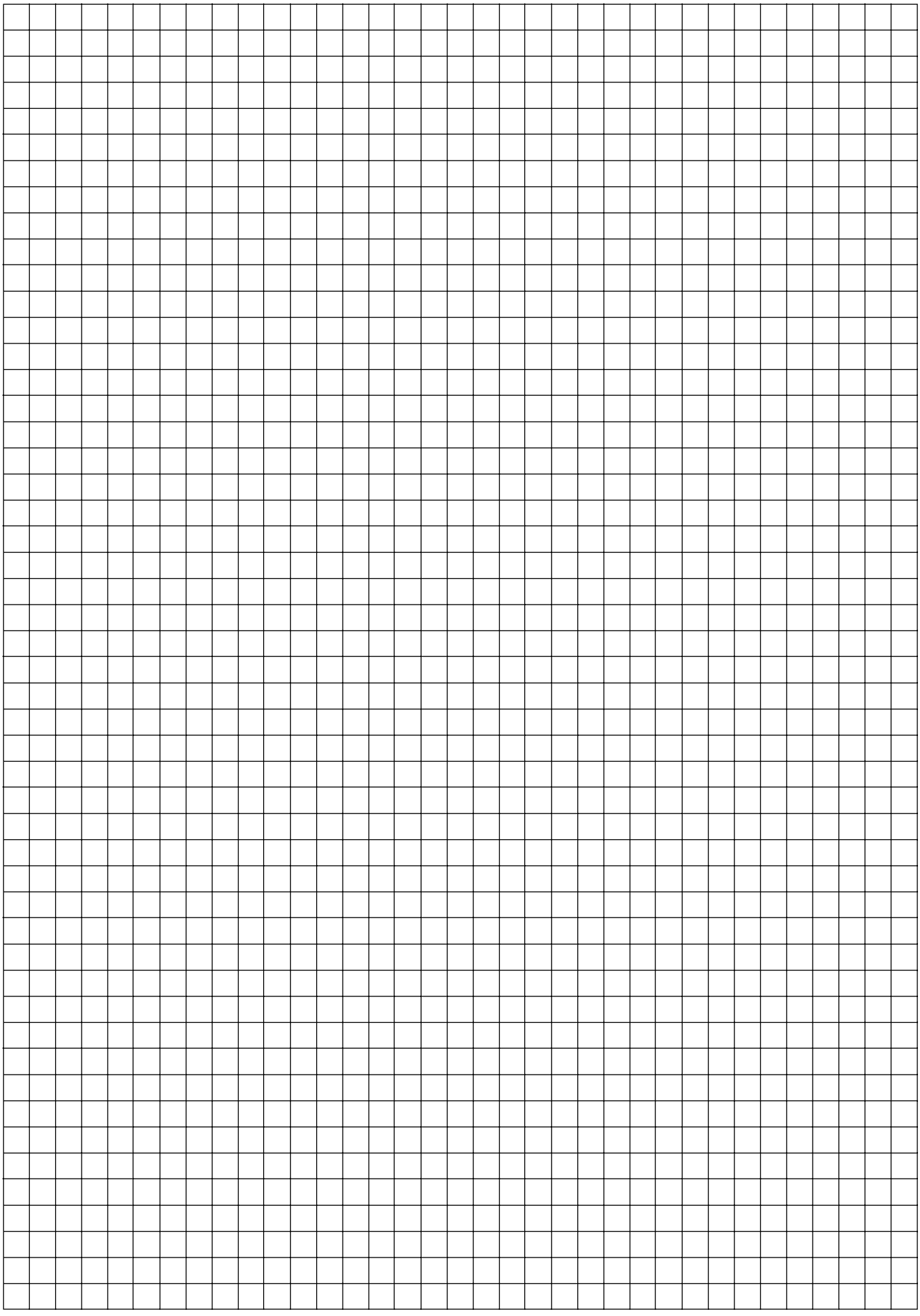
Tear Here

Tear Here

Scrap Graph Paper — This sheet will *not* be scored.



Scrap Graph Paper — This sheet will *not* be scored.



Tear Here

Tear Here

ALGEBRA 2/TRIGONOMETRY

ALGEBRA 2/TRIGONOMETRY

FOR TEACHERS ONLY

The University of the State of New York

REGENTS HIGH SCHOOL EXAMINATION

ALGEBRA 2/TRIGONOMETRY

Wednesday, January 23, 2013 — 1:15 to 4:15 p.m., only

SCORING KEY AND RATING GUIDE

Mechanics of Rating

The following procedures are to be followed for scoring student answer papers for the Regents Examination in Algebra 2/Trigonometry. More detailed information about scoring is provided in the publication *Information Booklet for Scoring the Regents Examinations in Mathematics.*

Do *not* attempt to correct the student's work by making insertions or changes of any kind. In scoring the open-ended questions, use check marks to indicate student 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.

Each student's answer paper is to be scored by a minimum of three mathematics teachers. No one teacher is to score more than approximately one-third of the open-ended questions on a student's paper. On the student's separate answer sheet, for each question, record the number of credits earned and the teacher's assigned rater/scorer letter.

Schools are not permitted to rescore any of the open-ended questions on this exam after each question has been rated once, regardless of the final exam score. Schools are required to ensure that the raw scores have been added correctly and that the resulting scale score has been determined accurately.

Raters should record the student's scores for all questions and the total raw score on the student's separate answer sheet. Then the student's total raw score should be converted to a scale score by using the conversion chart that will be posted on the Department's web site at: http://www.p12.nysed.gov/assessment/ on Wednesday, January 23, 2013. Because scale scores corresponding to raw scores in the conversion chart may change from one administration to another, it is crucial that, for each administration, the conversion chart provided for that administration be used to determine the student's final score. The student's scale score should be entered in the box provided on the student's separate answer sheet. The scale score is the student's final examination score.

If the student's responses for the multiple-choice questions are being hand scored prior to being scanned, the scorer must be careful not to make any marks on the answer sheet except to record the scores in the designated score boxes. Marks elsewhere on the answer sheet will interfere with the accuracy of the scanning.

Part I

Allow a total of 54 credits, 2 credits for each of the following.

(1) 2	(8) 3	(15) 2	(22) . . . . . 3 . . . . .
(2) 3	(9) 4	(16) 3	(23) . . . . . 4 . . . . .
(3) 2	(10) 1	(17) 3	(24) . . . . . 1 . . . . .
(4) 3	(11) 4	(18) 1	(25) . . . . . 3 . . . . .
(5) 3	(12) 4	(19) 3	(26) . . . . . 2 . . . . .
(6) 1	(13) 1	(20) 1	(27) . . . . . 4 . . . . .
(7) 2	(14) 1	(21) 1	

Updated information regarding the rating of this examination may be posted on the New York State Education Department's web site during the rating period. Check this web site at: http://www.p12.nysed.gov/assessment/ and select the link "Scoring Information" for any recently posted information regarding this examination. This site should be checked before the rating process for this examination begins and several times throughout the Regents Examination period.

General Rules for Applying Mathematics Rubrics

I. General Principles for Rating

The rubrics for the constructed-response questions on the Regents Examination in Algebra 2/Trigonometry are designed to provide a systematic, consistent method for awarding credit. The rubrics are not to be considered all-inclusive; it is impossible to anticipate all the different methods that students might use to solve a given problem. Each response must be rated carefully using the teacher's professional judgment and knowledge of mathematics; all calculations must be checked. The specific rubrics for each question must be applied consistently to all responses. In cases that are not specifically addressed in the rubrics, raters must follow the general rating guidelines in the publication *Information Booklet for Scoring the Regents Examinations in Mathematics*, use their own professional judgment, confer with other mathematics teachers, and/or contact the State Education Department for guidance. During each Regents Examination administration period, rating questions may be referred directly to the Education Department. The contact numbers are sent to all schools before each administration period.

II. Full-Credit Responses

A full-credit response provides a complete and correct answer to all parts of the question. Sufficient work is shown to enable the rater to determine how the student arrived at the correct answer.

When the rubric for the full-credit response includes one or more examples of an acceptable method for solving the question (usually introduced by the phrase "such as"), it does not mean that there are no additional acceptable methods of arriving at the correct answer. Unless otherwise specified, mathematically correct alternative solutions should be awarded credit. The only exceptions are those questions that specify the type of solution that must be used; e.g., an algebraic solution or a graphic solution. A correct solution using a method other than the one specified is awarded half the credit of a correct solution using the specified method.

III. Appropriate Work

Full-Credit Responses: The directions in the examination booklet for all the constructed-response questions state: "Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc." The student has the responsibility of providing the correct answer ***and*** showing how that answer was obtained. The student must "construct" the response; the teacher should not have to search through a group of seemingly random calculations scribbled on the student paper to ascertain what method the student may have used.

Responses With Errors: Rubrics that state "Appropriate work is shown, but …" are intended to be used with solutions that show an essentially complete response to the question but contain certain types of errors, whether computational, rounding, graphing, or conceptual. If the response is incomplete; i.e., an equation is written but not solved or an equation is solved but not all of the parts of the question are answered, appropriate work has ***not*** been shown. Other rubrics address incomplete responses.

IV. Multiple Errors

Computational Errors, Graphing Errors, and Rounding Errors: Each of these types of errors results in a 1-credit deduction. Any combination of two of these types of errors results in a 2-credit deduction. No more than 2 credits should be deducted for such mechanical errors in any response. The teacher must carefully review the student's work to determine what errors were made and what type of errors they were.

Conceptual Errors: A conceptual error involves a more serious lack of knowledge or procedure. Examples of conceptual errors include using the incorrect formula for the area of a figure, choosing the incorrect trigonometric function, or multiplying the exponents instead of adding them when multiplying terms with exponents. A response with one conceptual error can receive no more than half credit.

If a response shows repeated occurrences of the same conceptual error, the student should not be penalized twice. If the same conceptual error is repeated in responses to other questions, credit should be deducted in each response.

If a response shows two (or more) different major conceptual errors, it should be considered completely incorrect and receive no credit.

If a response shows one conceptual error and one computational, graphing, or rounding error, the teacher must award credit that takes into account both errors; i.e., awarding half credit for the conceptual error and deducting 1 credit for each mechanical error (maximum of two deductions for mechanical errors).

Part II

For each question, use the specific criteria to award a maximum of 2 credits. Unless otherwise specified, mathematically correct alternative solutions should be awarded appropriate credit.

(28) **[2]** 1810, and appropriate work is shown.

[1] Appropriate work is shown, but one computational error is made, but an appropriate sum is stated.

or

[1] Appropriate work is shown, but one conceptual error is made, but an appropriate sum is stated.

or

[1] Appropriate work is shown to find 176, but no further correct work is shown.

or

[1] 1810, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct answer that was obtained by an obviously incorrect procedure.

(29) **[2]** Sum $= \frac{11}{3}$ and product $= 2$, and appropriate work is shown.

[1] Appropriate work is shown, but one computational error is made, but an appropriate sum and product are stated.

or

[1] Appropriate work is shown, but one conceptual error is made, but an appropriate sum and product are stated.

or

[1] Appropriate work is shown to find the correct roots, $x = \frac{2}{3}$ and $x = 3$, but no further correct work is shown.

or

[1] Appropriate work is shown to find $\frac{11}{3}$ and 2, but the answers are not labeled or are labeled incorrectly.

or

[1] Appropriate work is shown to find sum $= \frac{11}{3}$ or product $= 2$.

or

[1] Sum $= \frac{11}{3}$ and product $= 2$, but no work is shown.

[0] $\frac{11}{3}$ and 2, but the answers are not labeled or are labeled incorrectly, and no work is shown.

or

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

(30) **[2]** 25, and appropriate work is shown.

[1] Appropriate work is shown, but one computational error is made, but an appropriate value is stated.

or

[1] Appropriate work is shown, but one conceptual error is made, but an appropriate value is stated.

or

[1] 25, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

(31) **[2]** 7, and appropriate work is shown.

[1] Appropriate work is shown, but one computational error is made, but an appropriate interquartile range is stated.

or

[1] Appropriate work is shown, but one conceptual error is made, but an appropriate interquartile range is stated.

or

[1] The interval 72–79 is stated, but no further correct work is shown.

or

[1] $Q_1 = 72$ and $Q_3 = 79$ are stated, but no further correct work is shown.

or

[1] 7, but no work is shown.

[0] 72 and 79 are stated, but no further correct work is shown.

or

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

(32) **[2]** $\frac{1 \pm \sqrt{19}}{6}$, and appropriate work is shown.

[1] Appropriate work is shown, but one computational or simplification error is made, but appropriate solutions are stated.

or

[1] Appropriate work is shown, but one conceptual error is made, but appropriate solutions are stated.

or

[1] Appropriate work is shown, but the solutions are stated as decimals.

or

[1] $\frac{1 \pm \sqrt{19}}{6}$, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

(33) **[2]** 2.14, and appropriate work is shown.

[1] Appropriate work is shown, but one computational or rounding error is made, but an appropriate number of hours is stated.

or

[1] Appropriate work is shown, but one conceptual error is made, but an appropriate number of hours is stated.

or

[1] $3t = \ell n\ 614$ or $t = \frac{\ell n\ 614}{3}$ is stated, but no further correct work is shown.

or

[1] 2.14, but no work is shown.

[0] $614 = e^{3t}$, but no further correct work is shown.

or

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

(34) **[2]** "$x \leq -2$ or $x \geq 5$" or an equivalent answer, and appropriate work is shown.

[1] Appropriate work is shown, but one computational or graphing error is made, but an appropriate solution is stated.

or

[1] Appropriate work is shown, but one conceptual error is made, but an appropriate solution is stated.

or

[1] Appropriate work is shown, but the solution is not expressed as a disjunction.

or

[1] "$x \leq -2$ or $x \geq 5$," but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

(35) **[2]** 171°53'

[1] One computational or rounding error is made, but an appropriate answer is stated.

or

[1] One conceptual error is made, but an appropriate answer is stated.

or

[1] Appropriate work is shown, but the answer is expressed as a decimal.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

Part III

For each question, use the specific criteria to award a maximum of 4 credits. Unless otherwise specified, mathematically correct alternative solutions should be awarded appropriate credit.

(36) **[4]** 4 and 5, and appropriate algebraic work is shown.

[3] Appropriate work is shown, but one computational or factoring error is made, but appropriate values are stated.

[2] Appropriate work is shown, but two or more computational or factoring errors are made, but appropriate values are stated.

or

[2] Appropriate work is shown, but one conceptual error is made, but appropriate values are stated.

or

[2] $x^2 - 9x + 20 = 0$ is written, but no further correct work is shown.

or

[2] 4 and 5, but a method other than algebraic is used.

[1] Appropriate work is shown, but one conceptual error and one computational or factoring error are made, but appropriate values are stated.

or

[1] $(x + 4)^2 = 17x - 4$ is written, but no further correct work is shown.

or

[1] 4 and 5, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

(37) **[4]** $y = 215.983(1.652)^x$ and 7250, and appropriate work is shown.

[3] Appropriate work is shown, but one computational or rounding error is made, but an appropriate number of bacteria is stated.

or

[3] The expression $215.983(1.652)^x$ is written and 7250, and appropriate work is shown.

or

[3] $y = 215.983(1.652)^x$ and 7250, but no work is shown.

[2] Appropriate work is shown, but two or more computational or rounding errors are made, but an appropriate number of bacteria is stated.

or

[2] Appropriate work is shown, but one conceptual error is made, but an appropriate number of bacteria is stated.

or

[2] The expression $215.983(1.652)^x$ is written and 7250, but no work is shown.

or

[2] $y = 215.983(1.652)^x$, but no further correct work is shown.

or

[2] An incorrect exponential regression equation is solved appropriately for the number of bacteria.

[1] Appropriate work is shown, but one conceptual error and one computational or rounding error are made, but an appropriate number of bacteria is stated.

or

[1] The expression $215.983(1.652)^x$ is written, but no further correct work is shown.

or

[1] 7250, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

(38) **[4]** 182.3 and 128.7, and appropriate work is shown.

[3] Appropriate work is shown, but one computational or rounding error is made, but appropriate distances are found.

or

[3] Appropriate work is shown to find either 182.3 or 128.7, but no further correct work is shown.

[2] Appropriate work is shown, but two or more computational or rounding errors are made, but appropriate distances are found.

or

[2] Appropriate work is shown, but one conceptual error is made, but appropriate distances are found.

or

[2] $m\angle FAB = 43$ and $m\angle AFB = 32$ are found, and a correct substitution is made into the Law of Sines, but no further correct work is shown.

[1] Appropriate work is shown, but one conceptual error and one computational or rounding error are made, but appropriate distances are found.

or

[1] $m\angle FAB = 43$ and $m\angle AFB = 32$ are found, but no further correct work is shown.

or

[1] 182.3 and 128.7, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

Part IV

For this question, use the specific criteria to award a maximum of 6 credits. Unless otherwise specified, mathematically correct alternative solutions should be awarded appropriate credit.

(39) **[6]** $\frac{2}{3}$ or an equivalent answer, and appropriate algebraic work is shown.

[5] Appropriate work is shown, but one computational or factoring error is made, but an appropriate solution is stated.

or

[5] Appropriate work is shown to find $\frac{2}{3}$ and 1, but the extraneous solution is not rejected.

[4] Appropriate work is shown, but two computational or factoring errors are made, but an appropriate solution is stated.

or

[4] $(3x - 2)(x - 1) = 0$ is written, but no further correct work is shown.

[3] Appropriate work is shown, but three or more computational or factoring errors are made, but an appropriate solution is stated.

or

[3] Appropriate work is shown, but one conceptual error is made, but an appropriate solution is stated.

or

[3] A quadratic equation in standard form (set equal to zero) is written correctly, but no further correct work is shown.

or

[3] $\frac{2}{3}$, but a method other than algebraic is used.

[2] Appropriate work is shown, but one conceptual error and one computational or factoring error are made, but an appropriate solution is stated.

or

[2] $x^2 + x - 1 = 16x^2 - 24x + 9$ is written, but no further correct work is shown.

[1] Appropriate work is shown, but one conceptual error and two or more computational or factoring errors are made, but an appropriate solution is stated.

or

[1] $\frac{2}{3}$, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

Map to Core Curriculum

Content Strands	Item Numbers
Number Sense and Operations	14, 19, 27
Algebra	1, 2, 4, 5, 6, 8, 9, 11, 12, 13, 15, 16, 17, 18, 20, 21, 22, 23, 25, 26, 28, 29, 30, 32, 33, 34, 36, 38, 39
Measurement	35
Statistics and Probability	3, 7, 10, 24, 31, 37

Regents Examination in Algebra 2/Trigonometry

January 2013

Chart for Converting Total Test Raw Scores to Final Examination Scores (Scale Scores)

The *Chart for Determining the Final Examination Score for the January 2013 Regents Examination in Algebra 2/Trigonometry* will be posted on the Department's web site at: http://www.p12.nysed.gov/assessment/ on Wednesday, January 23, 2013. Conversion charts provided for previous administrations of the Regents Examination in Algebra 2/Trigonometry must NOT be used to determine students' final scores for this administration.

Online Submission of Teacher Evaluations of the Test to the Department

Suggestions and feedback from teachers provide an important contribution to the test development process. The Department provides an online evaluation form for State assessments. It contains spaces for teachers to respond to several specific questions and to make suggestions. Instructions for completing the evaluation form are as follows:

1. Go to http://www.forms2.nysed.gov/emsc/osa/exameval/reexameval.cfm.
2. Select the test title.
3. Complete the required demographic fields.
4. Complete each evaluation question and provide comments in the space provided.
5. Click the SUBMIT button at the bottom of the page to submit the completed form.