



New York State Testing Program

Educator Guide to the Regents Examination in Algebra II

Next Generation Mathematics Learning Standards

THE UNIVERSITY OF THE STATE OF NEW YORK

Regents of The University

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Foreword

The information contained in this Educator Guide is designed to raise educator awareness of the structure of the New York State Regents Examination in Algebra II measuring the [New York State Next Generation Mathematics Learning Standards](#).

The guide provides educators with pertinent information about the test development process, the learning standards that the test design is set to measure, the format of the testing session, including which types of questions will be asked, and which mathematics tools are allowed during testing. Links to additional resources are provided to further enhance educators' understanding of the structure of the Regents Examination in Algebra II. Educators are encouraged to review the guide prior to the test administration to gain familiarity with the test format. The information presented can also be used as a platform for educator discussion on how student assessment results can guide future instruction.

The High School Regents Examination testing schedule for the June 2026 administration can be found on the [New York State Education Department's website](#). Questions regarding the New York State Testing Program and test design may be addressed to the Office of State Assessment at emscassessinfo@nysed.gov. Questions regarding the New York State Learning Standards may be addressed to the Office of Standards and Instruction at P12StandardsInstruction@nysed.gov.

New York State High School Mathematics Testing Program

In September 2017, the Board of Regents adopted the New York State Next Generation Mathematics Learning Standards, which were implemented at the beginning of the 2022-2023 school year. The New York State High School Mathematics Testing Program is designed to measure student progress on the Next Generation Mathematics Learning Standards following the implementation timeline for the Regents Examinations as follows:

- June 2024: Algebra I
- June 2025: Geometry
- June 2026: Algebra II

New York State Educators' Involvement in Test Development

Many steps in the test development process for the Regents Examination in Algebra II involve New York State-certified classroom teachers. For example, teachers write and revise all test questions and scoring rubrics. The New York State Education Department (NYSED) continues to expand the number of opportunities for New York State educators to become involved. New York State educators provide the critical input necessary to ensure that the tests are fair, valid, and appropriate for students through their participation in many test-development activities.

The test development process includes the development, review, and approval of test questions, construction of field and operational test forms, final approval of test forms prior to administration, and the development of scoring materials. NYSED remains committed to improving the quality of the State's assessments and the experiences that students have taking these tests. For more information on opportunities to participate in the test development process, please visit [Test Development Participation](#).

The Next Generation Mathematics Learning Standards

The NYS Next Generation Mathematics Learning Standards define the knowledge and skills that individuals can and do habitually demonstrate over time when exposed to high-quality instructional environments and learning experiences. The Learning Standards, defined through the integration of the Standards for Mathematical Content and the Standards for Mathematical Practice, collectively, are focused and cohesive — designed to support student access to the knowledge and understanding of the mathematical concepts that are necessary to function in a world very dependent upon the application of mathematics. Students are expected to understand math conceptually, use procedural skills, and solve math problems rooted in the real world, deciding for themselves which strategies, formulas, and grade-appropriate tools (e.g., calculator, straightedge, or compass) to use.

Curriculum and instruction that support the content of the learning standards and the unique learning needs of students are locally determined by each individual district in New York State. Teacher preference and flexibility in planning units of study continue to play vital roles to both meet the needs of the students and align with the expectations of the learning standards. For additional guidance with instructional planning surrounding the Next Generation Mathematics Learning Standards, please see the [Next Generation Mathematics Learning Standards](#).

Standards for Mathematical Practice

The Learning Standards for each grade level (and high school course) begin with the eight Standards for Mathematical Practice. The Standards for Mathematical Practice describe the ways in which developing practitioners increasingly should engage with the subject matter as they grow in mathematical maturity and expertise throughout the elementary, middle, and high school years. References to the integration of the Standards for Mathematical Content and the Standards for Mathematical Practice are provided throughout the Next Generation Mathematics Learning Standards.

Please note that the Algebra II overview does not include every learning standard that should be included in instruction. Further information about the entire scope of the learning expectations for each grade level, as well as additional instructional considerations that include the within-grade connections, grade-level fluencies, and connecting the Standards for Mathematical Practice to Mathematical Content can be found in the Next Generation Mathematics Learning Standards and the [associated grade-level crosswalks/snapshots](#).

Conceptual Categories, Domains, Clusters, Standards, and Assessment

The Algebra II Examination will measure the NYS Next Generation Mathematics Learning Standards. The NYS Next Generation Mathematics Learning Standards are divided into *conceptual categories*, *domains*, *clusters*, and *standards*.

- *Conceptual Categories* are the highest organizing level in the standards and portray a coherent view of high school mathematics.
- *Domains* are larger groups of related *clusters* and *standards*. *Standards* from different *domains* may be closely related.
- *Clusters* are groups of related *standards*. Note that *standards* from different *clusters* may sometimes be closely related, because mathematics is a connected subject.
- *Standards* define what students should understand and be able to do. In some cases, *standards* are further articulated into lettered components.

Algebra II is associated with the high school content standards within four conceptual categories:

Number & Quantity, Algebra, Functions, and Statistics & Probability. The conceptual category of **Modeling** is also included in Algebra II, but is best interpreted not as a collection of isolated topics but rather in relation to other standards. Making mathematical models is a Standard for Mathematical Practice, and specific modeling standards appear throughout the high school standards. Modeling links classroom mathematics and statistics to everyday life, work, and decision-making. Modeling is the process of choosing and using appropriate mathematics and statistics to analyze empirical situations, to understand them better, and to improve decisions.

While all questions on the Regents Examination are linked to a primary standard, some questions measure more than one standard and one or more of the Standards for Mathematical Practice. Similarly, some questions measure cluster-level understandings. As a result of the alignment to standards, clusters, and Standards for Mathematical Practice, the test assesses students' conceptual understanding, procedural fluency, and problem-solving abilities, rather than assessing their knowledge of isolated skills and facts.

Regents Examination in Algebra II Blueprint

The test blueprint for the Regents Examination in Algebra II demonstrates NYSED's commitment to ensuring that educators are able to focus their instruction on the most critical elements of the Algebra II course.

The following chart shows the percent of test by credit, as well as the domains included in Algebra II for each conceptual category.

Conceptual Category	Percent of Test by Credits	Domains in Algebra II
Number & Quantity	4% - 8%	The Real Number System (N-RN) The Complex Number System (N-CN)
Algebra	30% - 39%	Seeing Structure in Expressions (A-SSE) Arithmetic with Polynomials and Rational Expressions (A-APR) Creating Equations (A-CED) Reasoning with Equations and Inequalities (A-REI)
Functions	38% - 45%	Interpreting Functions (F-IF) Building Functions (F-BF) Linear, Quadratic, and Exponential Models (F-LE) Trigonometric Functions (F-TF)
Statistics & Probability	14% - 22%	Interpreting Categorical and Quantitative Data (S-ID) Making Inferences and Justifying Conclusions(S-IC) Conditional Probability and the Rules of Probability(S-CP)

The chart on page 6 of this guide illustrates the relationship between the *conceptual categories*, *domains*, *clusters*, and *standards* that comprise Algebra II.

Conceptual Category	Domain	Cluster	Cluster Code	Standard	
Number and Quantity 4% - 8%	The Real Number System	Extend the properties of exponents to rational exponents.	N-RN.A	N-RN.1 N-RN.2	
	The Complex Number System	Perform arithmetic operations with complex numbers.	N-CN.A	N-CN.1 N-CN.2	
Algebra 30% - 39%	Seeing Structure in Expressions	Interpret the structure of expressions.	A-SSE.A	A-SSE.2	
		Write expressions in equivalent forms to reveal their characteristics.	A-SSE.B	A-SSE.3(a,c)	
	Arithmetic with Polynomials and Rational Expressions	Understand the relationship between zeros and factors of polynomials.	A-APR.B	A-APR.2 A-APR.3	
		Rewrite rational expressions.	A-APR.D	A-APR.6	
	Creating Equations	Create equations that describe numbers or relationships.	A-CED.A	A-CED.1	
	Reasoning with Equations and Inequalities	Understand solving equations as a process of reasoning and explain the reasoning.	A-REI.A	A-REI.1b A-REI.2	
		Solve equations and inequalities in one variable.	A-REI.B	A-REI.4b	
		Solve systems of equations.	A-REI.C	A-REI.7b	
		Represent and solve equations and inequalities graphically.	A-REI.D	A-REI.11	
	Functions 38% - 45%	Interpreting Functions	Understand the concept of a function and use function notation.	F-IF.A	F-IF.3
Interpret functions that arise in applications in terms of the context.			F-IF.B	F-IF.4 F-IF.6	
Analyze functions using different representations.			F-IF.C	F-IF.7(c,e) F-IF.8b F-IF.9	
Building Functions		Build a function that models a relationship between two quantities.	F-BF.A	F-BF.1(a,b) F-BF.2	
		Build new functions from existing functions.	F-BF.B	F-BF.3b F-BF.4a F-BF.5a	
				F-BF.6 F-BF.7	
		Linear, Quadratic, and Exponential Models	Construct and compare linear, quadratic, and exponential models and solve problems.	F-LE.A	F-LE.2 F-LE.4
Interpret expressions for functions in terms of the situation they model.			F-LE.B	F-LE.5	
Trigonometric Functions		Extend the domain of trigonometric functions using the unit circle.	F-TF.A	F-TF.1 F-TF.2 F-TF.4	
				Model periodic phenomena with trigonometric functions.	F-TF.B
		Prove and apply trigonometric identities.	F-TF.C	F-TF.8	
Statistics and Probability 14% - 22%		Interpreting Categorical and Quantitative Data	Summarize, represent, and interpret data on a single count or measurement variable.	S-ID.A	S-ID.4a S-ID.4b
			Summarize, represent, and interpret data on two categorical and quantitative variables.	S-ID.B	S-ID.6a
		Making Inferences and Justifying Conclusions	Understand and evaluate random processes underlying statistical experiments.	S-IC.A	S-IC.2 S-IC.3 S-IC.4
			Make inferences and justify conclusions from sample surveys, experiments, and observational studies.	S-IC.B	S-IC.6a S-IC.6b
	Conditional Probability and the Rules of Probability		Understand independence and conditional probability and use them to interpret data.	S-CP.A	S-CP.1 S-CP.4
		Use the rules of probability to compute probabilities of compound events in a uniform probability model.	S-CP.B	S-CP.7	

Algebra II Examination: Time, Format, Design, and Scoring

Testing Session and Time

The Regents Examination in Algebra II will consist of one booklet that is administered during the designated time determined by NYSED. Students are permitted three hours to complete the Regents Examination in Algebra II. At the discretion of the principals, schools may begin secondary-level examinations earlier than the specified time. Regardless of the starting time, no student shall be permitted under any circumstances to hand in his or her test materials and leave the examination room before the [Uniform Statewide Admission Deadlines](#). This design provides ample time for students who work at different paces.

Question Formats

The Regents Examination in Algebra II contains multiple-choice and constructed-response questions. For multiple-choice questions, students select the correct response from four answer choices. For constructed-response questions, students are required to clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc. In some cases, they may be required to explain, in words, how they arrived at their answers. Students must also have the exclusive use of a graphing calculator for the full duration of the examination. For more information about calculator use please refer to page 10 of this document.

Multiple-choice questions will be used to assess procedural fluency and conceptual understanding. Multiple-choice questions measure the Standards for Mathematical Content and may incorporate Standards for Mathematical Practices and real-world applications. Some multiple-choice questions require students to complete multiple steps. Likewise, questions may measure more than one cluster, drawing on the simultaneous application of multiple skills and concepts. Within answer choices, distractors¹ will be based on plausible missteps.

Constructed-response questions will require students to show a deep understanding of mathematical procedures, concepts, and applications. The Regents Examination in Algebra II contains 2-, 4-, and 6-credit constructed-response questions.

The 2-credit constructed-response questions require students to complete a task and show their work. These questions may involve multiple steps, the application of multiple mathematics skills, and real-world applications. These questions may ask students to explain or justify their solutions and/or show their process of problem solving.

The 4-credit and 6-credit constructed-response questions require students to show their work in completing more extensive problems that may involve multiple tasks. Students may be asked to make sense of mathematical and real-world problems in order to demonstrate procedural and conceptual understanding. These questions may ask students to explain or justify their solutions and/or show their process of problem solving.

¹ A distractor is an incorrect response that may appear to be a plausible correct response to a student who has not mastered the skill or concept being tested.

Algebra II Examination Design

Test Component	Number of Questions	Credits per Question	Credits per Section
Part I	24	2	48
Part II	8	2	16
Part III	3	4	12
Part IV	1	6	6
Total	36	-	82

Algebra II Scoring Policies

The general procedures to be followed in scoring Regents Examinations are provided in the publications Directions for Administering Regents Examinations (DET 541) and the [School Administrator's Manual](#). Both of these documents are available on the Department's [website](#). For more information see the Information Booklet for Scoring the Regents Examinations in Algebra II, the Directions for Administering Regents Examinations, the Scoring Key and Rating Guides, and the Model Response Set for the appropriate examination.

Policy Definitions

For each subject area, students perform along a continuum of the knowledge and skills necessary to meet the demands of the Learning Standards for Mathematics. There are students who meet the expectations of the standards with distinction, students who fully meet the expectations, students who minimally meet the expectations, students who partially meet the expectations, and students who do not demonstrate sufficient knowledge or skills required for any performance level. New York State assessments are designed to classify student performance into one of five levels based on the knowledge and skills the student has demonstrated.

These performance levels for the Mathematics Regents Examinations are defined as:

NYS Level 5

Students performing at this level meet the expectations of the Mathematics Learning Standards **with distinction** for Algebra II.

NYS Level 4

Students performing at this level **fully meet** the expectations of the Mathematics Learning Standards for Algebra II. They are likely prepared to succeed in the next level of coursework.

NYS Level 3

Students performing at this level **minimally meet** the expectations of the Mathematics Learning Standards for Algebra II. They meet the content area requirements for a Regents diploma but may need additional support to succeed in the next level of coursework.

NYS Level 2

Students performing at this level **partially meet** the expectations of the Mathematics Learning Standards for Algebra II. Students with disabilities performing at this level meet the content area requirements for a local diploma but may need additional support to succeed in the next level of coursework.

NYS Level 1

Students performing at this level demonstrate knowledge, skills, and practices embodied by the Mathematics Learning Standards for Algebra II below that of Level 2.

Performance Level Descriptions

Performance Level Descriptions exemplify the knowledge and skills students at each performance level demonstrate and describe the progression of learning within a subject area. The Performance Level Descriptions play a central role in the test development process, specifically question writing and standard setting. For information about the Next Generation Mathematics Learning Standards Performance Level Descriptions for Algebra II, please see the [Algebra II Performance Level Descriptions](https://www.nysed.gov/sites/default/files/programs/state-assessment/algebra-ii-pld.pdf) (<https://www.nysed.gov/sites/default/files/programs/state-assessment/algebra-ii-pld.pdf>).

Mathematics Tools for the Regents Examination in Algebra II

Calculators and Straightedges (rulers)

A graphing calculator and straightedge (ruler) **must** be available to all students taking the Regents Examination in Algebra II. No students may use calculators that are capable of symbol manipulation or that can communicate with other calculators through infrared sensors, nor may students use operating manuals, instruction or formula cards, or other information concerning the operation of calculators during the test. For more information regarding calculators see [The Guidelines for Graphing Calculator Use](#) and the [Directions for Administering Regents Examinations](#).

Note: Schools are responsible for supplying the appropriate tools for use with the Regents Examination in Algebra II.

Value of Pi

Students should use the π symbol and its corresponding value (i.e. pi key on the calculator) when applicable on the Regents Examination in Algebra II. Unless otherwise specified, use of the approximate values of π , such as 3.1416, 3.14, or $\frac{22}{7}$ are unacceptable.

Mathematics Tools

The use of tools is necessary for students to meet the Standards for Mathematical Practice in the Next Generation Mathematics Learning Standards for Mathematics. For example:

Use appropriate tools strategically

Mathematically proficient students consider the available tools when solving a mathematical problem. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.

Attend to precision

Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, expressing numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school, they have learned to examine claims and make explicit use of definitions.

Reference Sheet

A detachable reference sheet will be included at the end of the Regents Examination in Algebra II test booklet. It contains information that students are expected to apply, but not necessarily memorize. Teachers should use this reference sheet in instruction throughout the Algebra II course to familiarize students with its content.

This reference sheet is available at

<https://www.nysed.gov/sites/default/files/programs/state-assessment/algebra2-next-gen-reference-sheet.pdf>

Appendix A: Sample Questions for the Regents Examination in Algebra II

To aid in the implementation of the Next Generation Mathematics Learning Standards, a limited number of sample questions are being provided to help students, parents, and educators better understand the shifts of the NGMLS. The eleven questions below illustrate these shifts for Algebra II.

While educators from around the state have helped craft these sample questions, they have not undergone the same extensive review, vetting, and field testing that occurs with actual questions used on the State exams. The sample questions were designed to help educators think about content, NOT to show how operational exams look exactly or to provide information about how teachers should administer the test.

1. S-CP.A

a. Given:

$$A = \{3, 6, 9, 12, 15\}$$

$$B = \{2, 4, 6, 8, 10, 12\}$$

What is $A \cup B$, the union of set A and set B ?

(1) $\{6\}$

(2) $\{6, 12\}$

(3) $\{2, 3, 4, 8, 9, 10, 15\}$

(4) $\{2, 3, 4, 6, 8, 9, 10, 12, 15\}$

b. A fair six-sided die is rolled three times. Let A be the event that at least one of the rolls is a six. Which event represents A' , the complement of A ?

(1) Exactly one of the rolls is a six.

(2) None of the rolls is a six.

(3) At most one of the rolls is a six.

(4) All of the rolls are sixes.

2. F-TF.B

Which statement is true of the function $y = -2\cos[3(x - 4)] + 7$?

- (1) The midline is $y = -4$
- (2) The amplitude is -2
- (3) The range is $[-2, 2]$
- (4) The frequency is $\frac{3}{2\pi}$

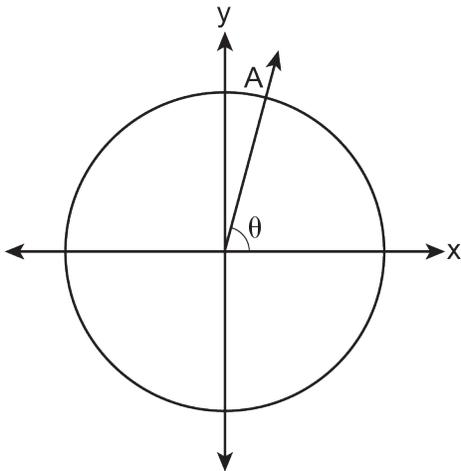
3. F-BF.B

The quadratic function $f(x)$ has a vertex of $(-4, 2)$. If $g(x) = f(2x)$, what is the vertex of $g(x)$?

- (1) $(-8, 2)$
- (2) $(-2, 2)$
- (3) $(-8, 4)$
- (4) $(-2, 1)$

4. F-TF.A

In the diagram below point A , $(\frac{1}{4}, \frac{\sqrt{15}}{4})$, represents the point where the terminal side of θ intersects the unit circle.



What is $\sin(-\theta)$?

- (1) $\frac{1}{4}$
- (2) $-\frac{1}{4}$
- (3) $\frac{\sqrt{15}}{4}$
- (4) $-\frac{\sqrt{15}}{4}$

5. A-REI.D

Given $f(x) = -|x|$ and $g(x) = \log_2(x)$, which interval best represents the solution set to the inequality $g(x) > f(x)$?

- (1) $(-0.64, \infty)$
- (2) $(0.64, \infty)$
- (3) $(0, 0.64]$
- (4) $(0, 0.64)$

6. S-ID.B

The table below shows the results of an experiment involving the growth of bacteria.

Time (x) (in minutes)	1	3	5	7	9	11
Number of Bacteria (y)	2	25	81	175	310	497

A power regression equation for this set of data is

- (1) $y = 48.914x - 111.819$
- (2) $y = 3.186(1.670)^x$
- (3) $y = 2.001x^{2.298}$
- (4) $y = 5.071x^2 - 11.943x + 11.586$

7. A-CED.A

A rabbit population doubles every four weeks. There are currently five rabbits in a restricted area. If t represents the time in weeks and $P(t)$ is the population of rabbits with respect to time, which inequality could be used to determine when there will be at least 56 rabbits?

- (1) $5(2)^{\frac{t}{4}} \geq 56$
- (2) $5(2)^{\frac{t}{4}} \leq 56$
- (3) $5(2)^{\frac{4}{t}} \geq 56$
- (4) $5(2)^{\frac{4}{t}} \leq 56$

8. A-APR.D

Find the quotient when $3x^4 - 19x^3 - 29x^2 - x + 8$ is divided by $x^2 - 8x + 3$. If there is a remainder, express the result in the form $q(x) + \frac{r(x)}{b(x)}$.

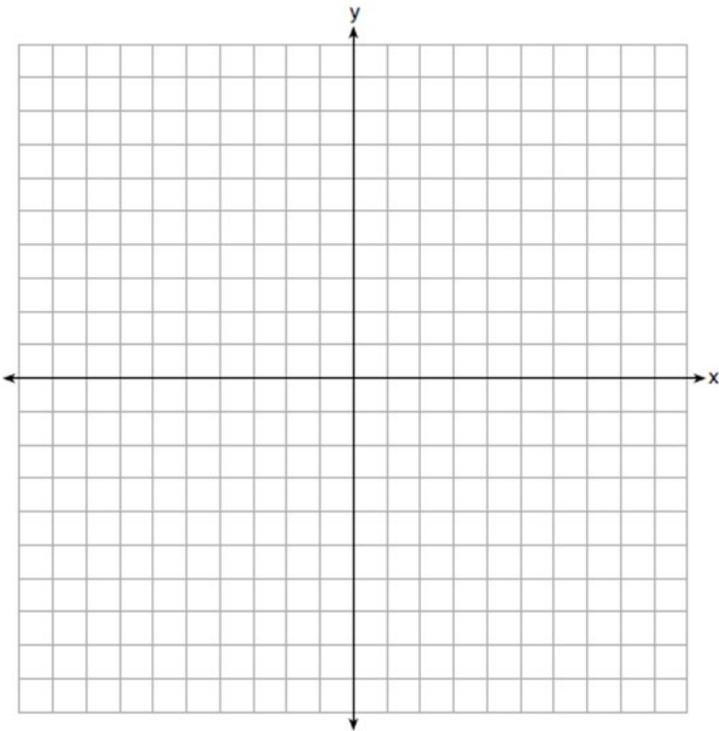
9. A-REI.A

Solve for x algebraically:

$$\sqrt{9-x} - \sqrt{2x} = 3$$

10. F-IF.C

On the set of axes below, graph $y = \tan(x) + 1$ for *at least one cycle*.



Answer Key and Commentary to Algebra II Sample Items

1. a. Choice 4. The union is the set of all elements that are in A, B, or both.

b. Choice 2. The complement of A is the set of all elements in the sample space that are not in A.

2. Choice 4. Frequency is defined as the reciprocal of the period. $P = \frac{2\pi}{|B|}$ and $F = \frac{1}{P}$, $F = \frac{3}{2\pi}$

3. Choice 2. A horizontal compression or stretch of $f(kx)$ means $(x, f(x)) \rightarrow \left(\frac{x}{k}, f(x)\right)$

4. Choice 4. Since $\sin(\theta)$ is an odd function, $\sin(-\theta) = -\sin(\theta)$, $\sin(-\theta) = -\frac{\sqrt{15}}{4}$.

5. Choice 2. As noted in the standards, inequalities involving linear, polynomial, absolute value, square root, cube root, trigonometric, exponential, and logarithmic functions are included.

6. Choice 3. As noted in the standards, power, quadratic, and exponential regressions are included.

7. Choice 1. As noted in the standards, creating inequalities will be assessed.

8. Rubric

[2] $3x^2 + 5x + 2 + \frac{2}{x^2 - 8x + 3}$, and correct work is shown.

[1] Appropriate work is shown, but one computational error is made.

or

[1] Appropriate work is shown, but one conceptual error is made.

or

[1] Appropriate work is shown to find $3x^2 + 5x + 2$, but no further correct work is shown.

[0] A zero response does not contain enough relevant course-level work to receive any credit, does not satisfy the criteria for one or more credits, or is a correct response that was obtained by an obviously incorrect procedure.

9. Rubric

[4] 0, and correct algebraic work is shown.

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

or

[3] Appropriate work is shown, but 8 is not rejected.

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

or

[2] Appropriate work is shown, but one conceptual error is made.

or

[2] Appropriate work is shown to find 0, but a method other than algebraic is used.

or

[2] A correct quadratic equation in standard form is written.

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

or

[1] A correct equation with one radical is written, but no further correct work is shown.

or

[1] 0, but no work is shown.

[0] A zero response does not contain enough relevant course-level work to receive any credit, does not satisfy the criteria for one or more credits, or is a correct response that was obtained by an obviously incorrect procedure.

10. Rubric

[2] A correct graph is drawn, such as one on the following page.

[1] Appropriate work is shown, but one graphing error is made.

or

[1] Appropriate work is shown, but one conceptual error is made.

[0] A zero response does not contain enough relevant course-level work to receive any credit, does not satisfy the criteria for one or more credits, or is a correct response that was obtained by an obviously incorrect procedure.

Examples of a 2-credit graph for question 10

