STAR Test Sample Questions
Algebra II (End-of-course)

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Algebra II (End-of-course)
Polynomials and Rational Expressions (Performance Level: Advanced) – Question 01

Which product is equivalent to $\dfrac{4x^2 - 16}{2 - x}$?

A $4(x - 2)$

B $4(x + 2)$

C $-4(x - 2)$

D $-4(x + 2)$

Algebra II (End-of-course)
Polynomials and Rational Expressions (Performance Level: Advanced) – Question 02

$$\frac{x^2 + 4x}{x+3} \cdot \frac{x^2 - 9}{x^2 + x - 12} =$$

A x

B 1

C $x + 4$

D $\dfrac{x+3}{x-3}$

Standardized Testing and Reporting - STAR

Algebra II (End-of-course)
Polynomials and Rational Expressions (Performance Level: Advanced) – Question 03

What is $\dfrac{20x^{-4}}{27y^2} \div \dfrac{8x^{-3}}{15y^{-5}}$?

A $\quad \dfrac{32y^3}{81x}$

B $\quad \dfrac{32}{81xy^7}$

C $\quad \dfrac{25y^3}{18x}$

D $\quad \dfrac{25}{18xy^7}$

Algebra II (End-of-course)
Polynomials and Rational Expressions (Performance Level: Advanced) – Question 04

$$8a^3 + c^3 =$$

A $(2a + c)(2a + c)(2a + c)$

B $(2a - c)(4a^2 + 2ac + c^2)$

C $(2a - c)(4a^2 + 4ac + c^2)$

D $(2a + c)(4a^2 - 2ac + c^2)$

Algebra II (End-of-course)
Polynomials and Rational Expressions (Performance Level: Advanced) – Question 05

Which product of factors is equivalent to $(x+1)^2 - y^2$ **?**

A $(x+1+y)^2$

B $(x+1-y)^2$

C $(x-1+y)(x-1-y)$

D $(x+1+y)(x+1-y)$

Algebra II (End-of-course)
Polynomials and Rational Expressions (Performance Level: Proficient) – Question 01

What is the complete solution to the equation $|3 - 6x| = 15$?

A $\quad x = 2; x = 3$

B $\quad x = -2; x = 3$

C $\quad x = 2; x = -3$

D $\quad x = -2; x = -3$

Algebra II (End-of-course)
Polynomials and Rational Expressions (Performance Level: Proficient) – Question 02

What is the solution to the system of equations shown below?

$$\begin{cases} 2x - y + 3z = 8 \\ x - 6y - z = 0 \\ -6x + 3y - 9z = 24 \end{cases}$$

A $\left(0, 4, 4\right)$

B $\left(1, 4, \dfrac{10}{3}\right)$

C no solution

D infinitely many solutions

Algebra II (End-of-course)
Polynomials and Rational Expressions (Performance Level: Basic) – Question 01

For a wedding, Shereda bought several dozen roses and several dozen carnations. The roses cost $15 per dozen, and the carnations cost $8 per dozen. Shereda bought a total of 17 dozen flowers and paid a total of $192. How many roses did she buy?

A 6 dozen

B 7 dozen

C 8 dozen

D 9 dozen

Algebra II (End-of-course)
Polynomials and Rational Expressions (Performance Level: Basic) – Question 02

The total area of a rectangle is $4x^4 - 9y^2$.

Which factors could represent the length times width?

A $\left(2x^2 - 3y\right)\left(2x^2 + 3y\right)$

B $\left(2x^2 + 3y\right)\left(2x^2 + 3y\right)$

C $\left(2x - 3y\right)\left(2x - 3y\right)$

D $\left(2x + 3y\right)\left(2x - 3y\right)$

Algebra II (End-of-course)
Polynomials and Rational Expressions (Performance Level: Basic) – Question 03

Which expression is equivalent to $(6y^2 - 2)(6y + 2)$**?**

A $36y^2 - 4$

B $36y^3 - 4$

C $36y^2 + 12y^2 + 12y - 4$

D $36y^3 + 12y^2 - 12y - 4$

Algebra II (End-of-course)
Polynomials and Rational Expressions (Performance Level: Basic) – Question 04

Which polynomial represents $(3x^2 + x - 4)(2x - 5)?$

A $6x^3 - 13x^2 - 13x - 20$

B $6x^3 - 13x^2 - 13x + 20$

C $6x^3 + 13x^2 + 3x - 20$

D $6x^3 + 13x^2 + 3x + 20$

Standardized Testing and Reporting - STAR

Algebra II (End-of-course)
Quadratics, Conics, and Complex Numbers (Performance Level: Advanced) –
Question 01

If $i = \sqrt{-1}$, then $4i(6i) =$

A 48

B 24

C -24

D -48

Algebra II (End-of-course)
Quadratics, Conics, and Complex Numbers (Performance Level: Advanced) –
Question 02

What are the solutions to the equation $x^2 + 2x + 2 = 0$?

A $x = 0; x = -2$

B $x = 0; x = -2i$

C $x = -1 + i, x = -1 - i$

D $x = -1 + 2\sqrt{2}; x = -1 - 2\sqrt{2}$

Algebra II (End-of-course)
Quadratics, Conics, and Complex Numbers (Performance Level: Advanced) –
Question 03

What are the solutions to the equation $1 + \dfrac{1}{x^2} = \dfrac{3}{x}?$

A $\quad x = \dfrac{3}{2} + \dfrac{\sqrt{5}}{2}; x = \dfrac{3}{2} - \dfrac{\sqrt{5}}{2}$

B $\quad x = 3 + \dfrac{\sqrt{5}}{2}; x = 3 - \dfrac{\sqrt{5}}{2}$

C $\quad x = \dfrac{3}{2} + \dfrac{\sqrt{13}}{2}; x = \dfrac{3}{2} - \dfrac{\sqrt{13}}{2}$

D $\quad x = 3 + \dfrac{\sqrt{13}}{2}; x = 3 - \dfrac{\sqrt{13}}{2}$

Algebra II (End-of-course)
Quadratics, Conics, and Complex Numbers (Performance Level: Advanced) –
Question 04

What are the x-intercepts of the graph of $y = 12x^2 - 5x - 2?$

A $1 \text{ and } -\dfrac{1}{6}$

B $-1 \text{ and } \dfrac{1}{6}$

C $\dfrac{2}{3} \text{ and } -\dfrac{1}{4}$

D $-\dfrac{2}{3} \text{ and } \dfrac{1}{4}$

Algebra II (End-of-course)
Quadratics, Conics, and Complex Numbers (Performance Level: Advanced) –
Question 05

Which ordered pair is the vertex of $f(x)=x^2+6x+5$?

A $(-3,-4)$

B $(-2,-3)$

C $(-1,0)$

D $(0,-5)$

Algebra II (End-of-course)
*Quadratics, Conics, and Complex Numbers (Performance Level: Advanced) –
Question 06*

$$4x^2 - 5y^2 - 16x - 30y - 9 = 0$$

What is the standard form of the equation of the conic given above?

A $\quad \dfrac{(x-4)^2}{11} - \dfrac{(y-3)^2}{4} = 1$

B $\quad \dfrac{(y+3)^2}{4} - \dfrac{(x-2)^2}{5} = 1$

C $\quad \dfrac{(y-3)^2}{6} - \dfrac{(x+2)^2}{9} = 1$

D $\quad \dfrac{(x-4)^2}{11} + \dfrac{(y-3)^2}{4} = 1$

Algebra II (End-of-course)

Quadratics, Conics, and Complex Numbers (Performance Level: Proficient) – Question 01
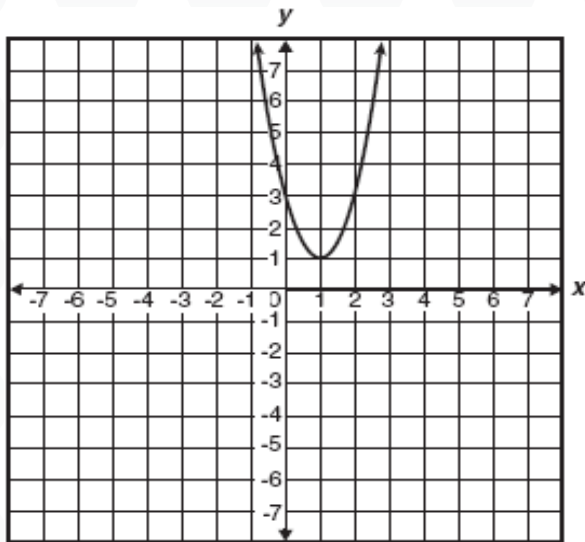
If $i = \sqrt{-1},$ **what is the value of** i^4**?**
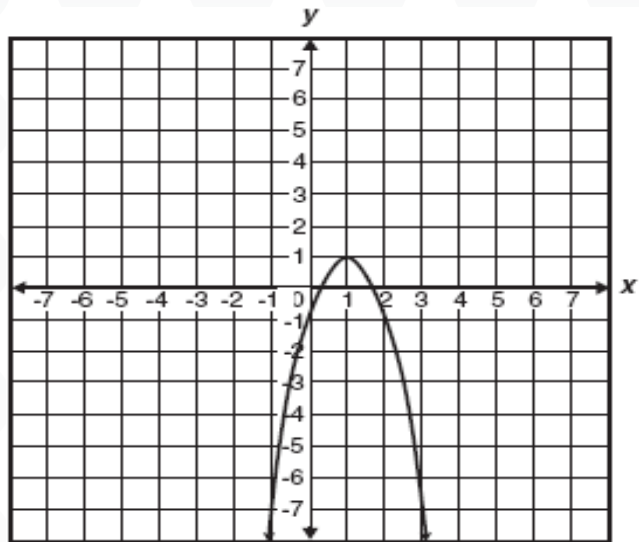
A i

B − i

C 1

D − 1

Algebra II (End-of-course)
Quadratics, Conics, and Complex Numbers (Performance Level: Proficient) –
Question 02

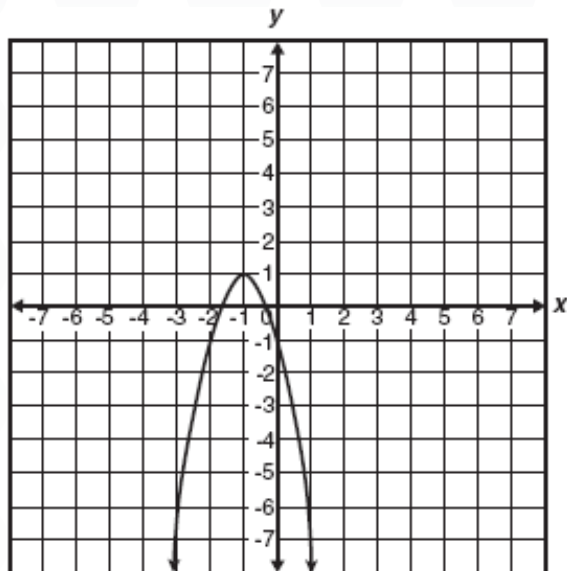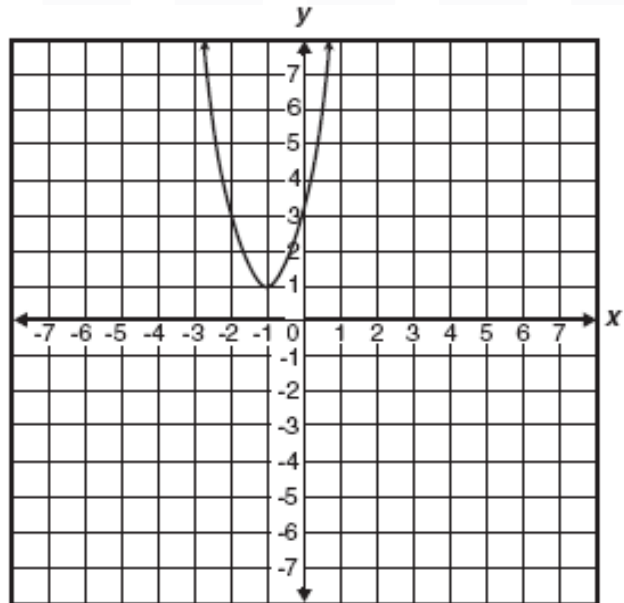**Which is the graph of** $y = -2(x-1)^2 + 1?$

A

B

C

D

Algebra II (End-of-course)
Series, Combinatorics, and Probability and Statistics (Performance Level: Advanced) – Question 01

How many terms does the binomial expansion of $\left(x^2 + 2y^3\right)^{20}$ contain?

A 20

B 21

C 40

D 60

Algebra II (End-of-course)
Series, Combinatorics, and Probability and Statistics (Performance Level: Advanced) – Question 02

Which expression represents $f\left(g\left(x\right)\right)$

if $f(x) = x^2 - 1$ and $g(x) = x + 3$?

A $x^3 + 3x^2 - x - 3$

B $x^2 + 6x + 8$

C $x^2 + x + 2$

D $x^2 + 8$

Algebra II (End-of-course)
Series, Combinatorics, and Probability and Statistics (Performance Level: Advanced) – Question 03

A math teacher is randomly distributing 15 rulers with centimeter labels and 10 rulers without centimeter labels. What is the probability that the first ruler she hands out will have centimeter labels and the second ruler will not have labels?

A $\dfrac{1}{24}$

B $\dfrac{1}{4}$

C $\dfrac{2}{5}$

D $\dfrac{23}{25}$

Algebra II (End-of-course)
Series, Combinatorics, and Probability and Statistics (Performance Level: Proficient) – Question 01

A train is made up of a locomotive, 7 different cars, and a caboose. If the locomotive must be first, and the caboose must be last, how many different ways can the train be ordered?

A 5040

B 181,440

C 362,880

D 823,543

Algebra II (End-of-course)
Series, Combinatorics, and Probability and Statistics (Performance Level: Proficient) – Question 02

What is the sum of the infinite geometric series $\frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} + \ldots$?

A 1

B 1.5

C 2

D 2.5

Algebra II (End-of-course)
Series, Combinatorics, and Probability and Statistics (Performance Level: Proficient) – Question 03

If $f(x) = x^2 + 2x + 1$ and $g(x) = 3(x+1)^2$,

which is an equivalent form of $f(x) + g(x)$?

A $x^2 + 4x + 2$

B $4x^2 + 2x + 4$

C $4x^2 + 8x + 4$

D $10x^2 + 20x + 10$