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-Presents-

ALGEBRA I

REGENTS EXAM
REVIEW MANUAL

WITH 8 REGENTS EXAMS,
6 TOPICALLY ORGANIZED

SPECIAL EDITION

*Each Question Linked to a Solution Video
QR Coded for One to One Initiative*



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Algebra I

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POLYNOMIALS

1. The expression $3(x^2 + 2x - 3) - 4(4x^2 - 7x + 5)$ is equivalent to

1) $-13x - 22x + 11$ 3) $19x^2 - 22x + 11$

2) $-13x^2 + 34x - 29$ 4) $19x^2 + 34x - 29$

06 2018 03



2. The quadratic equation $x^2 - 6x = 12$ is rewritten in the form $(x + p)^2 = q$, where q is a constant. What is the value of p ?

1) -12 3) -3

2) -9 4) 9

06 2018 12



3. Mrs. Allard asked her students to identify which of the polynomials below are in standard form and explain why.

I. $15x^4 - 6x + 3x^2 - 1$

II. $12x^3 + 8x + 4$

III. $2x^5 + 8x^2 + 10x$

06 2018 19



Which student's response is correct?

- 1) Tyler said I and II because the coefficients are decreasing.
- 2) Susan said only II because all the numbers are decreasing.
- 3) Fred said II and III because the exponents are decreasing.
- 4) Alyssa said II and III because they each have three terms.

4. If $y = 3x^3 + x^2 - 5$ and $z = x^2 - 12$, which polynomial is equivalent to $2(y + z)$?

- (1) $6x^3 + 4x^2 - 34$ (3) $6x^3 + 3x^2 - 22$
(2) $6x^3 + 3x^2 - 17$ (4) $6x^3 + 2x^2 - 17$

08 2018 13



5. The length, width, and height of a rectangular box are represented by $2x$, $3x + 1$, and $5x - 6$, respectively. When the volume is expressed as a polynomial in standard form, what is the coefficient of the 2nd term?

- (1) -13 (3) -26
(2) 13 (4) 26

08 2018 24



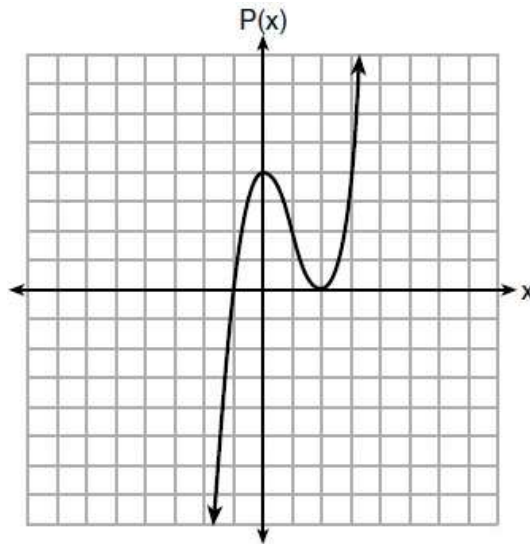
6. Write the expression $5x + 4x^2(2x + 7) - 6x^2 - 9x$ as a polynomial in standard form.

08 2017 31



7. Wenona sketched the polynomial $P(x)$ as shown on the axes below.

08 2017 07



Which equation could represent $P(x)$?

- 1) $P(x) = (x + 1)(x - 2)^2$ 3) $P(x) = (x + 1)(x - 2)$
2) $P(x) = (x - 1)(x + 2)^2$ 4) $P(x) = (x - 1)(x + 2)$

8. The function $r(x)$ is defined by the expression $x^2 + 3x - 18$. Use factoring to determine the zeros of $r(x)$.

06 2017 33



Explain what the zeros represent on the graph of $r(x)$.

9. If $f(x) = x^2$ and $g(x) = x$, determine the value(s) of x that satisfy the equation $f(x) = g(x)$.

06 2017 31



10. Express in simplest form:
 $(3x^2 + 4x - 8) - (-2x^2 + 4x + 2)$

06 2017 25



11. Which polynomial function has
zeros at -3 , 0 , and 4 ?

06 2017 10



- 1) $f(x) = (x + 3)(x^2 + 4)$ 3) $f(x) = x(x + 3)(x - 4)$
2) $f(x) = (x^2 - 3)(x - 4)$ 4) $f(x) = x(x - 3)(x + 4)$

12. Lynn, Jude, and Anne were given the
Function $f(x) = -2x^2 + 32$, and they were
asked to find $f(3)$. Lynn's answer was 14,
Jude's answer was 4, and Anne's answer
was ± 4 . Who is correct?

06 2017 05



- 1) Lynn, only 3) Anne, only
2) Jude, only 4) Both Lynn and Jude

13. What is the product of $2x + 3$
and $4x^2 - 5x + 6$?

08 2016 12



- 1) $8x^3 - 2x^2 + 3x + 18$
2) $8x^3 - 2x^2 - 3x + 18$
3) $8x^3 + 2x^2 - 3x + 18$
4) $8x^3 + 2x^2 + 3x + 18$

14. When multiplying polynomials for a Math assignment, Pat found the product to be $-4x + 8x^2 - 2x^3 + 5$. He then had to state the leading coefficient of this polynomial. Pat wrote down -4 . Do you agree with Pat's answer? Explain your reasoning.

08 2016 28



15. The expression $x^4 - 16$ is equivalent to

- 1) $(x^2 + 8)(x^2 - 8)$
- 2) $(x^2 - 8)(x^2 - 8)$
- 3) $(x^2 + 4)(x^2 - 4)$
- 4) $(x^2 - 4)(x^2 - 4)$

06 2016 01



16. An expression of the fifth degree is written with a leading coefficient of seven and a constant of six. Which expression is correctly written for these conditions?

- 1) $6x^5 + x^4 + 7$
- 2) $7x^6 - 6x^4 + 5$
- 3) $6x^7 - x^5 + 5$
- 4) $7x^5 + 2x^2 + 6$

06 2016 02



17. The expression $3(x^2 - 1) - (x^2 - 7x + 10)$ is equivalent to

- 1) $2x^2 - 7x + 7$
- 2) $2x^2 + 7x - 13$
- 3) $2x^2 - 7x + 9$
- 4) $2x^2 + 7x - 11$

06 2016 10



PROPERTIES OF ALGEBRA

1. Solve the equation below algebraically for the exact value of x .

$$6 - \frac{2}{3}(x + 5) = 4x$$

06 2018 30



2. The solution to $-2(1 - 4x) = 3x + 8$ is

(1) $\frac{6}{11}$

(3) $-\frac{10}{7}$

(2) 2

(4) -2

08 2018 04



3. The formula for converting degrees Fahrenheit (F) to degrees Kelvin (K) is:

$$K = \frac{5}{9}(F + 459.67)$$

Solve for F , in terms of K .

08 2018 29



4. A two-inch-long grasshopper can jump a horizontal distance of 40 inches. An athlete, who is five feet nine, wants to cover a distance of one mile by jumping. If this person could jump at the same ratio of body-length to jump-length as the grasshopper, determine, to the *nearest jump*, how many jumps it would take this athlete to jump one mile.

08 2017 30



5. Using the formula for the volume of a cone, express r in terms of V , h , and π .

08 2017 27



6. Which value of x satisfies the equation?

$$\frac{5}{6} \left(\frac{3}{8} - x \right) = 16?$$

- 1) -19.575 3) -16.3125
2) -18.825 4) -15.6875

08 2017 13



7. A part of Jennifer's work to solve the equation $2(6x^2 - 3) = 11x^2 - x$ is shown below.

Given: $2(6x^2 - 3) = 11x^2 - x$

Step 1: $12x^2 - 6 = 11x^2 - x$

08 2017 01



Which property justifies her first step?

- 1) identity property of multiplication 3) commutative property of multiplication
2) multiplication property of equality 4) distributive property of multiplication over subtraction

8. The formula for blood flow rate is given by $F = \frac{p_1 - p_2}{r}$, where F is the flow rate, p_1 the initial pressure, p_2 the final pressure, and r the resistance created by blood vessel size. Which formula can *not* be derived from the given formula?

06 2017 23



- 1) $p_1 = Fr + p_2$ 3) $r = F(p_2 - p_1)$
2) $p_2 = p_1 - Fr$ 4) $r = \frac{p_1 - p_2}{F}$

9. An equation is given below.

$$4(x - 7) = 0.3(x + 2) + 2.11$$

06 2017 19



The solution to the equation is

- 1) 8.3 3) 3
2) 8.7 4) -3
10. The formula for the surface area of a right rectangular prism is $A = 2lw + 2hw + 2lh$, where l , w , and h represent the length, width, and height, respectively. Which term of this formula is *not* dependent on the height?

06 2017 02



- 1) A 3) $2hw$
2) $2lw$ 4) $2lh$

11. Solve the equation below for x in terms of a . $4(ax + 3) - 3ax = 25 + 3a$

08 2016 32



12. The formula for the sum of the degree measures of the interior angles of a polygon is $S = 180(n - 2)$. Solve for n , the number of sides of the polygon, in terms of S .

06 2016 31



FUNCTIONS

1. If $k(x) = 2x^2 - 3\sqrt{x}$, then $k(9)$ is

- | | | | |
|----|-----|----|-----|
| 1) | 315 | 3) | 159 |
| 2) | 307 | 4) | 153 |

06 2018 02



2. Which ordered pair below is *not* a solution to $f(x) = x^2 - 3x + 4$?

- | | | | |
|----|-------------|----|---------|
| 1) | (0, 4) | 3) | (5, 14) |
| 2) | (1.5, 1.75) | 4) | (-1, 6) |

06 2018 08



3. A function is defined as $\{(0, 1), (2, 3), (5, 8), (7, 2)\}$. Isaac is asked to create one more ordered pair for the function. Which ordered pair can he add to the set to keep it a function?

- | | | | |
|----|--------|----|--------|
| 1) | (0, 2) | 3) | (7, 0) |
| 2) | (5, 3) | 4) | (1, 3) |

06 2018 11

