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K-12

CCHS-Algebra

Common Core High School: Algebra (Common Core State Standards Initiative)



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Question: 1

Let $p(y) = \frac{4y}{2} + 5$. If $y = 4$, then what is the value of $p(y)$?

- A. 9
- B. 7
- C. 13
- D. 37

Answer: C

Explanation:

The equation describes a functional relationship between y and $p(y)$. To solve the equation, substitute 4 as the value of y , such that

$$p(4) = \frac{4(4)}{2} + 5 = \frac{16}{2} + 5 = 8 + 5 = 13.$$

Therefore, choice C is correct.

Question: 2

What is the solution to $(3x^2 + 4x - 1) + (2x^2 - 7x - 3)$?

- A. $5x^2 + 3x - 4$
- B. $5x^2 - 3x - 4$
- C. $5x^2 - 3x + 25$
- D. $6x^2 - 11x + 2$

Answer: B

Explanation:

When adding these polynomials, the parentheses can simply be removed, which results in $3x^2 + 4x - 1 + 2x^2 - 7x - 3$. Collecting like terms yields $5x^2 - 3x - 4$. Therefore, choice B is correct.

Question: 3

What is the solution to $(5x^2 - 2x - 2) - (3x^2 + 4x - 1)$?

- A. $2x^2 - 6x - 1$

- B. $2x^2 - 6x - 3$
- C. $2x^2 + 2x - 3$
- D. $8x^2 - 6x - 1$

Answer: A

Explanation:

When subtracting polynomials, the parentheses around the first polynomial can simply be removed. When removing the parentheses around the second polynomial, the sign of each term must be switched. This results in $5x^2 - 2x - 2 - 3x^2 - 4x + 1$. Collecting like terms yields $2x^2 - 6x - 1$. Therefore, choice A is correct.

Question: 4

Which of the following is equivalent to $3(2x^2 - x - 4)$?

- A. $6x^2 - 3x + 7$
- B. $6x^2 - 3x + 12$
- C. $5x^2 - 3x - 7$
- D. $6x^2 - 3x - 12$

Answer: D

Explanation:

Applying the distributive property results in $3 \cdot 2x^2 - 3 \cdot x - 3 \cdot 4$. This expression can be simplified to $6x^2 - 3x - 12$. Therefore, choice D is correct.

Question: 5

Multiply: $(3x - 1)(2x + 5)$.

- A. $6x^2 + 7x + 5$
- B. $6x^2 + 13x + 5$
- C. $6x^2 - 18x - 5$
- D. $6x^2 + 13x - 5$

Answer: D

Explanation:

Multiply each term in one set of parentheses by each term in the other set: $(3x)(2x) + (3x)(5) + (-1)(2x) + (-1)(5) = 6x^2 + 15x - 2x - 5$. Then combine like terms: $6x^2 + 13x - 5$. Therefore, choice D is correct.

Question: 6

Which of the following binomials can be rewritten as a difference of squares with rational coefficients?

- A. $4x^2 - 20$
- B. $9x^2 - 25$
- C. $6x^2 - 100$
- D. $4x^2 + 25$

Answer: B

Explanation:

A difference of squares factors to a sum and a difference. For example, $a^2 - b^2$ factors to $(a + b)(a - b)$. The binomial $9x^2 - 25$ can be rewritten as $(3x)^2 - (5)^2$. Then $(3x)^2 - (5)^2$ can be factored to $(3x + 5)(3x - 5)$. Therefore, choice B is correct.

Question: 7

Which of the following is equivalent to $2\sqrt{4^4}$?

- A. 4
- B. 8
- C. 32
- D. 16

Answer: C

Explanation:

The radical $2\sqrt{4^4}$ can be written as $2 \cdot 4^{\frac{4}{2}}$ which is equal to $2 \cdot 4^2$ or $2 \cdot 16$ or 32. Therefore, choice C is correct.

Question: 8

Which of the following is equivalent to $(2x^3y)(4x^5y^3)$?

- A. $6x^8y^4$
- B. $8x^8y^4$
- C. $8x^{15}y^3$
- D. $6x^{15}y^3$

Answer: B

Explanation:

When multiplying expressions with exponents, the exponents of the like bases are added. The coefficients of the expressions are multiplied. For the problem $(2x^2y)(4x^5y^3)$, the product is $8x^7y^4$. Therefore, choice B is correct.

Question: 9

What is the 7th term of this geometric sequence?

-1, 2, -4, 8....

- A. 64
- B. -16
- C. -32
- D. -64

Answer: D

Explanation:

Consecutive terms in a geometric sequence have a common ratio. The common ratio of this sequence is -2 . The next three terms are -16 , 32 , and -64 . The 7th term is -64 . Therefore, choice D is correct.

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