Topic: Adding and subtracting polynomials

Question: Simplify the expression.

$$(9x^2 - 2x) - (5x^2 - 8x - 3)$$

Answer choices:

A $-4x^2 + 5$

B $4x^2 + 6x + 3$

C $12x^2 - 7$

D $14x^2 - 10x + 15$

Solution: B

First, we'll remove the parentheses. Since this is a subtraction of polynomials, we have to multiply every term in the second polynomial by -1 when we do that.

$$(9x^2 - 2x) - (5x^2 - 8x - 3)$$

$$9x^2 - 2x - 5x^2 + 8x + 3$$

Now we'll group like terms together in descending order of their exponents, and then combine them by adding their coefficients.

$$9x^2 - 5x^2 - 2x + 8x + 3$$

$$(9 - 5)x^2 + (-2 + 8)x + 3$$

$$4x^2 + 6x + 3$$

Topic: Adding and subtracting polynomials

Question: Simplify the expression.

$$(9x^3 + 4x^2 - 10x - 3) + (-2x^3 + 8x - 7x^2)$$

Answer choices:

A $11x^3 - 11x^2 + 3x - 3$

B $7x^3 - 3x^2 - 2x - 3$

C $7x^3 - 3x^2 + 2x - 3$

D $7x^3 - 11x^2 + 18x - 3$

Solution: B

First, remove the parentheses.

$$(9x^3 + 4x^2 - 10x - 3) + (-2x^3 + 8x - 7x^2)$$

$$9x^3 + 4x^2 - 10x - 3 - 2x^3 + 8x - 7x^2$$

Group like terms together in descending order of their exponents. Then combine them and simplify.

$$9x^3 - 2x^3 + 4x^2 - 7x^2 - 10x + 8x - 3$$

$$(9 - 2)x^3 + (4 - 7)x^2 + (-10 + 8)x - 3$$

$$7x^3 - 3x^2 - 2x - 3$$

Topic: Adding and subtracting polynomials

Question: Simplify the expression.

$$(4t^5 + t^3 - 4 + 3t^3 - 7t^2) - (5t^4 + 2t^5 - 2t^3 - 3t - 5)$$

Answer choices:

A $6t^5 - 5t^4 + t^3 - 7t^2 + 3t - 1$

B $6t^5 - 5t^4 + 6t^3 - 7t^2 + 3t + 1$

C $2t^5 - 5t^4 + 6t^3 - 7t^2 - 3t - 9$

D $2t^5 - 5t^4 + 6t^3 - 7t^2 + 3t + 1$

Solution: D

Distributing 1 across each set of parentheses will clear the parentheses.

$$(4t^5 + t^3 - 4 + 3t^3 - 7t^2) - (5t^4 + 2t^5 - 2t^3 - 3t - 5)$$

$$1(4t^5 + t^3 - 4 + 3t^3 - 7t^2) - 1(5t^4 + 2t^5 - 2t^3 - 3t - 5)$$

$$4t^5 + t^3 - 4 + 3t^3 - 7t^2 - 5t^4 - 2t^5 + 2t^3 + 3t + 5$$

Rearrange terms in descending order. Then simplify.

$$4t^5 - 2t^5 - 5t^4 + t^3 + 3t^3 + 2t^3 - 7t^2 + 3t - 4 + 5$$

$$2t^5 - 5t^4 + 6t^3 - 7t^2 + 3t + 1$$