



Algebraic Expressions and Identities Ex 6.5 Q28

Answer :

To simplify, we will proceed as follows:

$$\begin{aligned}
 & (3x - 2)(2x - 3) + (5x - 3)(x + 1) \\
 &= [(3x - 2)(2x - 3)] + [(5x - 3)(x + 1)] \\
 &= [3x(2x - 3) - 2(2x - 3)] + [5x(x + 1) - 3(x + 1)] && \text{(Distributive law)} \\
 &= 6x^2 - 9x - 4x + 6 + 5x^2 + 5x - 3x - 3 \\
 &= 6x^2 + 5x^2 - 9x - 4x + 5x - 3x - 3 + 6 && \text{(Rearranging)} \\
 &= 11x^2 - 11x + 3 && \text{(Combining like terms)}
 \end{aligned}$$

Thus, the answer is $11x^2 - 11x + 3$.

Algebraic Expressions and Identities Ex 6.5 Q29

Answer :

To simplify, we will proceed as follows:

$$\begin{aligned}
 & (5x - 3)(x + 2) - (2x + 5)(4x - 3) \\
 &= [(5x - 3)(x + 2)] - [(2x + 5)(4x - 3)] \\
 &= [5x(x + 2) - 3(x + 2)] - [2x(4x - 3) + 5(4x - 3)] && \text{(Distributive law)} \\
 &= 5x^2 + 10x - 3x - 6 - 8x^2 + 6x - 20x + 15 \\
 &= 5x^2 - 8x^2 + 10x - 3x + 6x - 20x - 6 + 15 && \text{(Rearranging)} \\
 &= 5x^2 - 8x^2 + 10x - 3x + 6x - 20x - 6 + 15 && \text{(Combining like terms)} \\
 &= -3x^2 - 7x + 9
 \end{aligned}$$

Hence, the answer is $-3x^2 - 7x + 9$.

Algebraic Expressions and Identities Ex 6.5 Q30

Answer :

To simplify, we will proceed as follows:

$$\begin{aligned}
 & (3x + 2y)(4x + 3y) - (2x - y)(7x - 3y) \\
 &= [(3x + 2y)(4x + 3y)] - [(2x - y)(7x - 3y)] \\
 &= [3x(4x + 3y) + 2y(4x + 3y)] - [2x(7x - 3y) - y(7x - 3y)] && \text{(Distributive law)} \\
 &= 12x^2 + 9xy + 8xy + 6y^2 - [14x^2 - 6xy - 7xy + 3y^2] \\
 &= 12x^2 + 9xy + 8xy + 6y^2 - 14x^2 + 6xy + 7xy - 3y^2 \\
 &= 12x^2 - 14x^2 + 9xy + 8xy + 6xy + 7xy + 6y^2 - 3y^2 && \text{(Rearranging)} \\
 &= -2x^2 + 30xy + 3y^2 && \text{(Combining like terms)}
 \end{aligned}$$

Thus, the answer is $-2x^2 + 30xy + 3y^2$.

Algebraic Expressions and Identities Ex 6.5 Q31

Answer :

To simplify, we will proceed as follows:

$$\begin{aligned}
 & (x^2 - 3x + 2)(5x - 2) - (3x^2 + 4x - 5)(2x - 1) \\
 &= [(x^2 - 3x + 2)(5x - 2)] - [(3x^2 + 4x - 5)(2x - 1)] \\
 &= [5x(x^2 - 3x + 2) - 2(x^2 - 3x + 2)] - [2x(3x^2 + 4x - 5) - 1 \times (3x^2 + 4x - 5)] && \text{(Distributive law)} \\
 &= [5x^3 - 15x^2 + 10x - (2x^2 - 6x + 4)] - [6x^3 + 8x^2 - 10x - 3x^2 - 4x + 5] \\
 &= [5x^3 - 15x^2 + 10x - 2x^2 + 6x - 4] - [6x^3 + 8x^2 - 10x - 3x^2 - 4x + 5] \\
 &= 5x^3 - 15x^2 + 10x - 2x^2 + 6x - 4 - 6x^3 - 8x^2 + 10x + 3x^2 + 4x - 5 \\
 &= 5x^3 - 6x^3 - 15x^2 - 8x^2 - 2x^2 + 3x^2 + 10x + 6x + 10x + 4x - 5 - 4 && \text{(Rearranging)} \\
 &= -x^3 - 22x^2 + 30x - 9 && \text{(Combining like terms)}
 \end{aligned}$$

Thus, the answer is $-x^3 - 22x^2 + 30x - 9$.

Algebraic Expressions and Identities Ex 6.5 Q32

Answer :

To simplify, we will proceed as follows:

$$\begin{aligned}
 & (x^3 - 2x^2 + 3x - 4)(x - 1) - (2x - 3)(x^2 - x + 1) \\
 &= [(x^3 - 2x^2 + 3x - 4)(x - 1)] - [(2x - 3)(x^2 - x + 1)] \\
 &= [x(x^3 - 2x^2 + 3x - 4) - 1(x^3 - 2x^2 + 3x - 4)] - [2x(x^2 - x + 1) - 3(x^2 - x + 1)] \\
 &\quad \text{(Distributive law)} \\
 &= [x(x^3 - 2x^2 + 3x - 4) - 1(x^3 - 2x^2 + 3x - 4)] - [2x(x^2 - x + 1) - 3(x^2 - x + 1)] \\
 &= x^4 - 2x^3 + 3x^2 - 4x - x^3 + 2x^2 - 3x + 4 - [2x^3 - 2x^2 + 2x - 3x^2 + 3x - 3] \\
 &= x^4 - 2x^3 + 3x^2 - 4x - x^3 + 2x^2 - 3x + 4 - 2x^3 + 2x^2 - 2x + 3x^2 - 3x + 3 \\
 &= x^4 - 2x^3 - 2x^3 - x^3 + 3x^2 + 2x^2 + 2x^2 + 3x^2 - 4x - 3x - 2x - 3x + 4 + 3 \\
 &\quad \text{(Rearranging)} \\
 &= x^4 - 5x^3 + 10x^2 - 12x + 7 \quad \text{(Combining like terms)}
 \end{aligned}$$

Thus, the answer is $x^4 - 5x^3 + 10x^2 - 12x + 7$.

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