Algebraic Expressions and Identities Ex 6.5 Q28

Answer :

To simplify, we will proceed as follows:

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

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

Algebraic Expressions and Identities Ex 6.5 Q29

Answer :

To simplify, we will proceed as follows:

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

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

Algebraic Expressions and Identities Ex 6.5 Q30

Answer :

To simplify, we will proceed as follows:

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

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:

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

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:

$$\begin{aligned}
&\left(x^3-2x^2+3x-4\right)(x-1)-(2x-3)\left(x^2-x+1\right)\\
&=\left[\left(x^3-2x^2+3x-4\right)(x-1)\right]-\left[(2x-3)\left(x^2-x+1\right)\right]\\
&=\left[x\left(x^3-2x^2+3x-4\right)-1\left(x^3-2x^2+3x-4\right)\right]-\left[2x\left(x^2-x+1\right)-3\left(x^2-x+1\right)\right]
\end{aligned}$$

(Distributive law)

$$\begin{aligned}
&=\left[x\left(x^3-2x^2+3x-4\right)-1\left(x^3-2x^2+3x-4\right)\right]-\left[2x\left(x^2-x+1\right)-3\left(x^2-x+1\right)\right]\\
&=x^4-2x^3+3x^2-4x-x^3+2x^2-3x+4-\left[2x^3-2x^2+2x-3x^2+3x-3\right]\\
&=x^4-2x^3+3x^2-4x-x^3+2x^2-3x+4-2x^3+2x^2-2x+3x^2-3x+3\\
&=x^4-2x^3-2x^3-x^3+3x^2+2x^2+2x^2+3x^2-4x-3x-2x-3x+4+3
\end{aligned}$$

(Rearranging)

$$=x^4-5x^3+10x^2-12x+7$$

(Combining like terms)

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

********** END **********