Algebraic Expressions and Identities Ex 6.5 Q23

Answer :

To simplify, we will proceed as follows:

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

Thus, the answer is $x^4y^2+x^3y^3-2x^2y^4$.

Algebraic Expressions and Identities Ex 6.5 Q24

Answer :

To simplify, we will proceed as follows:

$$
\begin{aligned}
&\left(x^3-2x^2+5x-7\right)(2x-3)\\
&=2x\left(x^3-2x^2+5x-7\right)-3\left(x^3-2x^2+5x-7\right)\\
&=2x^4-4x^3+10x^2-14x-3x^3+6x^2-15x+21\\
&=2x^4-4x^3-3x^3+10x^2+6x^2-14x-15x+21 \quad \text{(Rearranging)}\\
&=2x^4-7x^3+16x^2-29x+21 \quad \text{(Combining like terms)}
\end{aligned}
$$

Thus, the answer is $2x^4-7x^3+16x^2-29x+21$.

Algebraic Expressions and Identities Ex 6.5 Q25

Answer :

To simplify, we will proceed as follows:

$$
\begin{aligned}
&(5x+3)(x-1)(3x-2)\\
&=[(5x+3)(x-1)](3x-2)\\
&=[5x(x-1)+3(x-1)](3x-2) && \text{(Distributive law)}\\
&=\left[5x^2-5x+3x-3\right](3x-2)\\
&=\left[5x^2-2x-3\right](3x-2)\\
&=3x\left(5x^2-2x-3\right)-2\left(5x^2-2x-3\right)\\
&=15x^3-6x^2-9x-\left[10x^2-4x-6\right]\\
&=15x^3-6x^2-9x-10x^2+4x+6\\
&=15x^3-6x^2-10x^2-9x+4x+6 && \text{(Rearranging)}\\
&=15x^3-16x^2-5x+6 && \text{(Combining like terms)}
\end{aligned}
$$

Thus, the answer is $15x^3-16x^2-5x+6$.

Algebraic Expressions and Identities Ex 6.5 Q26

Answer :

To simplify, we will proceed as follows:

$$
\begin{aligned}
&(5-x)(6-5x)(2-x)\\
&=[(5-x)(6-5x)](2-x)\\
&=[5(6-5x)-x(6-5x)](2-x) && \text{(Distributive law)}\\
&=\left(30-25x-6x+5x^2\right)(2-x)\\
&=\left(30-31x+5x^2\right)(2-x)\\
&=2\left(30-31x+5x^2\right)-x\left(30-31x+5x^2\right)\\
&=60-62x+10x^2-30x+31x^2-5x^3\\
&=60-62x-30x+10x^2+31x^2-5x^3 && \text{(Rearranging)}\\
&=60-92x+41x^2-5x^3 && \text{(Combining like terms)}
\end{aligned}
$$

Thus, the answer is $60-92x+41x^2-5x^3$.

Algebraic Expressions and Identities Ex 6.5 Q27

Answer :

To simplify, we will proceed as follows:

$$
\begin{aligned}
&\left(2x^2+3x-5\right)\left(3x^2-5x+4\right)\\
&=2x^2\left(3x^2-5x+4\right)+3x\left(3x^2-5x+4\right)-5\left(3x^2-5x+4\right) && \text{(Distributive law)}\\
&=6x^4-10x^3+8x^2+9x^3-15x^2+12x-15x^2+25x-20\\
&=6x^4-10x^3+9x^3+8x^2-15x^2-15x^2+12x+25x-20 && \text{(Rearranging)}\\
&=6x^4-x^3-22x^2+36x-20 && \text{(Combining like terms)}
\end{aligned}
$$

Thus, the answer is $6x^4-x^3-22x^2+36x-20$.

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