Factorizations Ex 7.5 Q26

Answer :

$$
\begin{aligned}
&a^4-(2b+c)^4\\
&=(a^2)^2-[(2b+c)^2]^2\\
&=[a^2+(2b+c)^2][a^2-(2b+c)^2]\\
&=[a^2+(2b+c)^2]\{[a+(2b+c)][a-(2b+c)]\}\\
&=[a^2+(2b+c)^2](a+2b+c)(a-2b-c)
\end{aligned}
$$

Factorizations Ex 7.5 Q27

Answer :

$$
\begin{aligned}
&(3x+4y)^4-x^4\\
&=\left[(3x+4y)^2\right]^2-(x^2)^2\\
&=\left[(3x+4y)^2+x^2\right]\left[(3x+4y)^2-x^2\right]\\
&=\left[(3x+4y)^2+x^2\right]\left[(3x+4y)+x\right]\left[(3x+4y)-x\right]\\
&=\left\{(3x+4y)^2+x^2\right\}(3x+4y+x)(3x+4y-x)\\
&=\left\{(3x+4y)^2+x^2\right\}(4x+4y)(2x+4y)\\
&=\left\{(3x+4y)^2+x^2\right\}4(x+y)2(x+2y)\\
&=8\left\{(3x+4y)^2+x^2\right\}(x+y)(x+2y)
\end{aligned}
$$

Factorizations Ex 7.5 Q28

Answer :

$$p^2q^2 - p^4q^4$$
$$= p^2q^2\left(1 - p^2q^2\right)$$
$$= p^2q^2\left[1 - (pq)^2\right]$$
$$= p^2q^2(1 - pq)(1 + pq)$$

Factorizations Ex 7.5 Q29

Answer :

$$3x^3y - 243xy^3$$
$$= 3xy\left(x^2 - 81y^2\right)$$
$$= 3xy\left[x^2 - (9y)^2\right]$$
$$= 3xy(x - 9y)(x + 9y)$$

Factorizations Ex 7.5 Q30

Answer :

$$a^4b^4 - 16c^4$$
$$= \left[\left(a^2b^2\right)^2 - \left(4c^2\right)^2\right]$$
$$= \left(a^2b^2 + 4c^2\right)\left(a^2b^2 - 4c^2\right)$$
$$= \left(a^2b^2 + 4c^2\right)\left[(ab)^2 - (2c)^2\right]$$
$$= \left(a^2b^2 + 4c^2\right)(ab + 2c)(ab - 2c)$$

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