Factorizations Ex 7.6 Q6

Answer :

$$
\begin{aligned}
&9z^2 - x^2 + 4xy - 4y^2 \\
&= 9z^2 - \left(x^2 - 4xy + 4y^2\right) \\
&= 9z^2 - \left[x^2 - 2 \times x \times 2y + (2y)^2\right] \\
&= (3z)^2 - (x - 2y)^2 \\
&= [3z - (x - 2y)]\,[3z + (x - 2y)] \\
&= (3z - x + 2y)\,(3z + x - 2y) \\
&= (x - 2y + 3z)\,(-x + 2y + 3z)
\end{aligned}
$$

Factorizations Ex 7.6 Q7

Answer :

$$
\begin{aligned}
&9a^4 - 24a^2b^2 + 16b^4 - 256 \\
&= \left(9a^4 - 24a^2b^2 + 16b^4\right) - 256 \\
&= \left[\left(3a^2\right)^2 - 2 \times 3a^2 \times 4b^2 + \left(4b^2\right)^2\right] - 16^2 \\
&= \left(3a^2 - 4b^2\right)^2 - 16^2 \\
&= \left[\left(3a^2 - 4b^2\right) - 16\right]\left[\left(3a^2 - 4b^2\right) + 16\right] \\
&= \left(3a^2 - 4b^2 - 16\right)\left(3a^2 - 4b^2 + 16\right)
\end{aligned}
$$

Factorizations Ex 7.6 Q8

Answer :

$$
\begin{aligned}
&16-a^6+4a^3b^3-4b^6\\
&=16-\left(a^6-4a^3b^3+4b^6\right)\\
&=4^2-\left[\left(a^3\right)^2-2\times a^3\times 2b^3+\left(2b^3\right)^2\right]\\
&=4^2-\left(a^3-2b^3\right)^2\\
&=\left[4-\left(a^3-2b^3\right)\right]\left[4+\left(a^3-2b^3\right)\right]\\
&=\left(4-a^3+2b^3\right)\left(4+a^3-2b^3\right)\\
&=\left(a^3-2b^3+4\right)\left(-a^3+2b^3+4\right)
\end{aligned}
$$

Factorizations Ex 7.6 Q9

Answer :

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

Factorizations Ex 7.6 Q10

Answer :

$$
\begin{aligned}
& x^2+2x+1-9y^2 \\
&= \left(x^2+2x+1\right)-9y^2 \\
&= \left(x^2+2\times x\times 1+1\right)-9y^2 \\
&= \left(x+1\right)^2-\left(3y\right)^2 \\
&= \left[\left(x+1\right)-3y\right]\left[\left(x+1\right)+3y\right] \\
&= \left(x+1-3y\right)\left(x+1+3y\right) \\
&= \left(x+3y+1\right)\left(x-3y+1\right)
\end{aligned}
$$

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