Factorizations Ex 7.5 Q41

Answer :

$$
\begin{aligned}
&a^4-16(b-c)^4\\
&=(a^2)^2-[4(b-c)^2]^2\\
&=[a^2+4(b-c)^2][a^2-4(b-c)^2]\\
&=[a^2+4(b-c)^2]\{a^2-[2(b-c)]^2\}\\
&=[a^2+4(b-c)^2][a+2(b-c)][a-2(b-c)]\\
&=[a^2+4(b-c)^2](a+2b-2c)(a-2b+2c)
\end{aligned}
$$

Factorizations Ex 7.5 Q42

Answer :

$$
\begin{aligned}
&2a^5-32a\\
&=2a\left(a^4-16\right)\\
&=2a\left[\left(a^2\right)^2-4^2\right]\\
&=2a\left(a^2+4\right)\left(a^2-4\right)\\
&=2a\left(a^2+4\right)\left(a^2-2^2\right)\\
&=2a\left(a^2+4\right)\left(a+2\right)\left(a-2\right)\\
&=2a\left(a-2\right)\left(a+2\right)\left(a^2+4\right)
\end{aligned}
$$

Factorizations Ex 7.5 Q43

Answer :

$$
\begin{aligned}
&a^4b^4 - 81c^4 \\
&= \left(a^2b^2\right)^2 - \left(9c^2\right)^2 \\
&= \left(a^2b^2 + 9c^2\right)\left(a^2b^2 - 9c^2\right) \\
&= \left(a^2b^2 + 9c^2\right)\left[\left(ab\right)^2 - \left(3c\right)^2\right] \\
&= \left(a^2b^2 + 9c^2\right)\left(ab + 3c\right)\left(ab - 3c\right)
\end{aligned}
$$

Factorizations Ex 7.5 Q44

Answer :

$$
\begin{aligned}
&xy^9 - yx^9 \\
&= xy(y^8 - x^8) \\
&= xy[(y^4)^2 - (x^4)^2] \\
&= xy(y^4 + x^4)(y^4 - x^4) \\
&= xy(y^4 + x^4)[(y^2)^2 - (x^2)^2] \\
&= xy(y^4 + x^4)(y^2 + x^2)(y^2 - x^2) \\
&= xy(y^4 + x^4)(y^2 + x^2)(y + x)(y - x)
\end{aligned}
$$

Factorizations Ex 7.5 Q45

Answer :

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

Factorizations Ex 7.5 Q46

Answer :

$$
\begin{aligned}
&18a^2x^2 - 32 \\
&= 2\left(9a^2x^2 - 16\right) \\
&= 2\left[\left(3ax\right)^2 - 4^2\right] \\
&= 2\left(3ax - 4\right)\left(3ax + 4\right)
\end{aligned}
$$

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