Factorizations Ex 7.6 Q11

**Answer :**

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

Factorizations Ex 7.6 Q12

**Answer :**

$$
\begin{aligned}
&96-4x-x^2\\
&=100-4-4x-x^2\\
&=100-\left(x^2+4x+4\right)\\
&=100-\left(x^2+2\times x\times 2+2^2\right)\\
&=10^2-\left(x+2\right)^2\\
&=\left[10-\left(x+2\right)\right]\left[10+\left(x+2\right)\right]\\
&=\left(10-x-2\right)\left(10+x+2\right)\\
&=\left(8-x\right)\left(12+x\right)\\
&=\left(x+12\right)\left(-x+8\right)
\end{aligned}
$$

Factorizations Ex 7.6 Q13

**Answer :**

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

Factorizations Ex 7.6 Q14

**Answer :**

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

Factorizations Ex 7.6 Q15

**Answer :**

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

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