

Factorizations Ex 7.4 Q16

Answer

$$egin{align*} \left(ax+by
ight)^2 + \left(bx-ay
ight)^2 &= a^2x^2 + 2abxy + b^2y^2 + b^2x^2 - 2abxy + a^2y^2 \ &= a^2x^2 + b^2y^2 + b^2x^2 + a^2y^2 \ &= \left(a^2x^2 + a^2y^2
ight) + \left(b^2x^2 + b^2y^2
ight) \ \left[\textit{Regrouping the expressions}
ight] \ &= a^2\left(x^2 + y^2
ight) + b^2\left(x^2 + y^2
ight) \ &= \left(a^2 + b^2
ight)\!\left(x^2 + y^2
ight) \ \end{aligned}$$

 $\left[Taking \left(x^2 + y^2
ight) as \ the \ common \ factor
ight]$

Factorizations Ex 7.4 Q17

Answer:

$$16(a-b)^3 - 24(a-b)^2$$

= $8(a-b)^2[2(a-b)-3]$ {Taking $[8(a-b)^2]$ as the common factor}
= $8(a-b)^2(2a-2b-3)$

Factorizations Ex 7.4 Q18

Answer

$$egin{aligned} ab\Big(x^2+1\Big)+x\Big(a^2+b^2\Big)&=abx^2+ab+a^2x+b^2x\ &=\Big(abx^2+a^2x\Big)+\Big(b^2x+ab\Big)\quadiggl[ext{Regrouping the expressions}iggr]\ &=ax\Big(bx+a\Big)+b\Big(bx+a\Big)\ &=\Big(ax+b\Big)\Big(bx+a\Big) \end{aligned}$$

 $\Big[Taking \, \Big(bx + a \Big) \, as \, the \, common \, factor \Big]$

Factorizations Ex 7.4 Q19

Answer:

$$\begin{aligned} a^2x^2 + \left(ax^2 + 1\right)x + a &= a^2x^2 + ax^3 + x + a \\ &= \left(ax^3 + a^2x^2\right) + \left(x + a\right) \quad \begin{bmatrix} \textit{Regrouping the expressions} \end{bmatrix} \\ &= ax^2\left(x + a\right) + \left(x + a\right) \\ &= \left(ax^2 + 1\right)\left(x + a\right) \quad \begin{bmatrix} \textit{Taking } (x + a) \text{ as the common factor} \end{bmatrix} \end{aligned}$$

Factorizations Ex 7.4 Q20

Answer:

$$egin{aligned} aig(a-2b-cig)+2bc&=a^2-2ab-ac+2bc\ &=ig(a^2-acig)+ig(2bc-2abig) &\qquad [Regrouping\ the\ terms]\ &=aig(a-cig)+2big(c-aig)\ &=aig(a-cig)-2big(a-cig) &\qquad [\because ig(c-aig)=-ig(a-cig)]\ &=ig(a-2big)ig(a-cig) \end{aligned}$$

 $[Taking (a-c) \ as \ the \ common \ factor]$

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