



Factorizations Ex 7.4 Q16

Answer :

$$\begin{aligned}
 (ax + by)^2 + (bx - ay)^2 &= a^2x^2 + 2abxy + b^2y^2 + b^2x^2 - 2abxy + a^2y^2 \\
 &= a^2x^2 + b^2y^2 + b^2x^2 + a^2y^2 \\
 &= (a^2x^2 + a^2y^2) + (b^2x^2 + b^2y^2) \quad [\text{Regrouping the expressions}] \\
 &= a^2(x^2 + y^2) + b^2(x^2 + y^2) \\
 &= (a^2 + b^2)(x^2 + y^2) \\
 &\quad [\text{Taking } (x^2 + y^2) \text{ as the common factor}]
 \end{aligned}$$

Factorizations Ex 7.4 Q17

Answer :

$$\begin{aligned}
 16(a - b)^3 - 24(a - b)^2 \\
 = 8(a - b)^2[2(a - b) - 3] \quad \{\text{Taking } [8(a - b)^2] \text{ as the common factor}\} \\
 = 8(a - b)^2(2a - 2b - 3)
 \end{aligned}$$

Factorizations Ex 7.4 Q18

Answer :

$$\begin{aligned}
 ab(x^2 + 1) + x(a^2 + b^2) &= abx^2 + ab + a^2x + b^2x \\
 &= (abx^2 + a^2x) + (b^2x + ab) \quad [\text{Regrouping the expressions}] \\
 &= ax(bx + a) + b(bx + a) \\
 &= (ax + b)(bx + a) \\
 &\quad [\text{Taking } (bx + a) \text{ as the common factor}]
 \end{aligned}$$

Factorizations Ex 7.4 Q19

Answer :

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

Factorizations Ex 7.4 Q20

Answer :

$$\begin{aligned}
 a(a - 2b - c) + 2bc &= a^2 - 2ab - ac + 2bc \\
 &= (a^2 - ac) + (2bc - 2ab) \quad [\text{Regrouping the terms}] \\
 &= a(a - c) + 2b(c - a) \\
 &= a(a - c) - 2b(a - c) \quad [\because (c - a) = -(a - c)] \\
 &= (a - 2b)(a - c) \\
 &\quad [\text{Taking } (a - c) \text{ as the common factor}]
 \end{aligned}$$

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