FACTORISATION

FACTORISATION USING IDENTITIES

EXERCISE

Q.1 Factorise:

(i) $x^3 - 2x^2y + 3xy^2 - 6y^3$

(ii) $6ab - b^2 + 12ac - 2bc$

Q.2 Factorise :

(i) $x^4 - y^4$ (ii) $16x^4 - 81$

(iii) $x^4 - (y + z)^4$ (iv) $2x - 32x^5$

(v) $3a^4 - 48b^4$ (vi) $81x^4 - 121x^2$

Q.3 Factorise each of the following algebraic expressions:

(i) $16(2x - 1)^2 - 25z^2$

(ii) $4a^2 - 9b^2 - 2b - 3b$

(iii) $x^2 - 4x + 4y - y^2$

(iv) $3 - 12\ (a - b)^2$

(v) $x\ (x + z) - y(y + z)$

(vi) $a^2 - b^2 - a - b$

Q.4 Factorise :

(i) $4x^2 - 4xy + y^2 - 9z^2$

(ii) $16 - x^2 - 2xy - y^2$

(iii) $x^4 - (x - z)^4$

Q.5 Factorise :

(i) $4(x + y)^2 - 28y\,(x + y) + 49y^2$

(ii) $(2a + 3b)^2 + 2(2a + 3b)\,(2a - 3b) + (2a - 3b)^2$

Q.6 Factorise each of the following expressions:

(i) $9x^2 - 4y^2$

(ii) $36x^2 - 12x + 1 - 25y^2$

(iii) $a^2 - 1 + 2x - x^2$

Q.7 Factorise:

(i) $9 - a^6 + 2a^3b^3 - b^6$

(ii) $x^{16} - y^{16} + x^8 + y^8$

Q.8 Factorzie: $(2x + 3y)^2 - 5(2x + 3y) - 14$

Q.9 Factorise: $3m^2 + 24m + 36$

ANSWER KEY

1. (i) $(x - 2y)\,(x^2 + 3y^2)$

(ii) $(6a - b)(b + 2c)$

2. (i) $(x - y)\,(x + y)\,(x^2 + y^2)$

(ii) $(2x - 3)\,(2x + 3)\,(4x^2 + 9)$

(iii) $(x - y - z)\,(x + y + z)\,\{x^2 + (y + z)^2\}$

(iv) $2x\,(1 + 4x^2)\,(1 - 2x)\,(1 + 2x)$

(v) $3(a - 2b)\,(a + 2b)\,(a^2 + 4b^2)$

(vi) $x^2\,(9x - 11)\,(9x + 11)$

3. (i) $(8x - 5z - 4)\,(8x + 5z - 4)$

(ii) $(2a + 3b)\,(2a - 3b - 1)$

(iii) $(x - y)\,(x + y - 4)$

(iv) $3(1 + 2a - 2b)\,(1 - 2a + 2b)$

(v) $(x - y)(x + y + z)$

(vi) $(a + b)\{(a - b) - 1\}$

4. (i) $(2x - y + 3z)(2x - y - 3z)$

(ii) $(4 + x + y)(4 - x - y)$

(iii) $(2x^2 - 2xz + z^2)(2x - z)z$

5. (i) $(2x - 5y)^2$

(ii) $16a^2$

6. (i) $(3x + 2y)(3x - 2y)$

(ii) $(6x - 5y - 1)(6x + 5y - 1)$

(iii) $(a - 1 + x)(a + 1 - x)$

7. (i) $(a^3 - b^3 + 3)(-a^3 + b^3 + 3)$

(ii) $(x^8 + y^8)(x^8 - y^8 + 1)$

(iii) $(p + q - a + b)(p + q + a - b + 1)$

8. $(2x + 3y - 7)(2x + 3y + 2)$

9. $3(m + 2)(m + 6)$