

CHAPTER 11

FACTORISATION

More Questions for Practice

1. Factorise:

(i) $2x^2yz - 3xy^2z + 4xyz^2$

(ii) $\frac{1}{9}p^2q^3 - \frac{1}{81}pqr^2 + \frac{1}{27}pq^2$

2. Factorise:

(i) $4(a+b)(3x-y) + 6(a+b)(2y-3x)$

(ii) $(a+b)(x+y) + c(x+y) + z(a+b+c)$

3. Factorise:

(i) $3x^5 - 6x^4 - 2x^3 + 4x^2 + x - 2$

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

(iii) $xy^2 + (x-1)y - 1$

(iv) $p - 2 - (p-2)^2 + ap - 2a$

(v) $xy - ay - ax + a^2 + bx - ab$

(vi) $x - 1 - (x-1)^2 + 4 - 4x$

4. Factorise:

(i) $\frac{4}{25} - 25x^2$

(ii) $(x+y)^2 - 4z^2$

(iii) $(x-y)^2 - 16z^2$

(iv) $x^3y^3 - \frac{16xy}{z^2}$

(v) $a^4 - (a^2 - 3b^2)^2$

(vi) $(2x - 3y)^2 - 4y^2$

(vii) $1 - 36(m+n)^2$

5. Factorise:

(i) $9(x+y)^3 - 16(x+y)$

(ii) $ab^5c - abc^5$

(iii) $(3p-q)^2 - (q+3p)^2$

6. Factorise:

(i) $7y^{12} + 252y^{10} + 84y^{11}$

(ii) $4x^2 + 40x + 100$

(iii) $a^2b^2 - 6abc + 9c^2$

7. Factorise the following trinomials:

(i) $x^2 + 2kx - 3k^2$

(ii) $y^2 - 2k^2 - ky$

(iii) $70 - 17m + m^2$

(iv) $(x+1)^2 - 11(x+1) + 24$

(v) $(2a+3b)^2 - 14(2a+3b) + 48$

(vi) $(4p-3q)^2 + (4p-3q) - 6$

(vii) $(3x-5y)^2 - 2(3x-5y) - 15$

8. Factorise the following trinomials:

(i) $2x^2 - 13xy + 6y^2$

(ii) $11a^2 + 54a + 63$

(iii) $2 + 3x - 2x^2$

(iv) $36x^2 + 12xyz - 15y^2z^2$

(v) $2(a+1)^2 + 3(a+1) - 35$

(vi) $15(x-2y)^2 - 16(x-2y) - 15$

9. Factorise:

(i) $9(3x+1)^2 - 16(x-1)^2$

(ii) $a^2 - 2ab + b^2 - c^2$

(iii) $25 - p^2 - q^2 - 2pq$

10. Factorise:

(i) $4m^2 + 13m + 10$

(ii) $5x^2 - 32x + 12$

(iii) $2a^2 - 17ab + 21b^2$

(iv) $(a+b)^2 - 13(a+b) + 42$

(v) $1 - (2x+3y) - 6(2x+3y)^2$

(vi) $7 + 10(x+y) - 8(x+y)^2$

ANSWERS

1. (i) $xyz(2x - 3y + 4z)$ (ii) $\frac{1}{9}pq\left(pa^2 - \frac{1}{9}r^2 + \frac{1}{3}q\right)$
2. (i) $2(a + b)(4y - 3x)$ (ii) $(a + b + c)(x + y + z)$
3. (i) $(x - 2)(3x^4 - 2x^2 + 1)$ (ii) $(a - c)(ac + b^2)$ (iii) $(xy - 1)(y + 1)$
 (iv) $(p - 2)(3 - p + a)$ (v) $(x - a)(y - a + b)$ (vi) $(1 - x)(x + 2)$
4. (i) $\left(\frac{2}{5} - 5x\right)\left(\frac{2}{5} + 5x\right)$ (ii) $(x + y + 2z)(x + y - 2z)$ (iii) $(x - y - 4z)(x - y + 4z)$
 (iv) $xy\left(xy - \frac{4}{z}\right)\left(xy + \frac{4}{z}\right)$ (v) $3b^2(2a^2 - 3b^2)$ (vi) $(2x - 5y)(2x - y)$
 (vii) $(1 - 6m - 6n)(1 + 6m + 6n)$
5. (i) $(x + y)(3x + 3y - 4)(3x + 3y + 4)$ (ii) $abc(b^2 + c^2)(b + c)(b - c)$
 (iii) $(-2q)(6p)$
6. (i) $7y^{10}(y + 6)^2$ (ii) $4(x + 5)^2$ (iii) $(ab - 3c)^2$
7. (i) $(x + 3k)(x - k)$ (ii) $(y - 2k)(y + k)$
 (iii) $(10 - m)(7 - m)$ or $(m - 7)(m - 10)$ (iv) $(x - 7)(x - 2)$
 (v) $(2a + 3b - 6)(2a + 3b - 8)$ (vi) $(4p - 3q + 3)(4p - 3q - 2)$ (vii) $(3x - 5y - 5)(3x - 5y + 3)$
8. (i) $(2x - y)(x - 6y)$ (ii) $(11a + 21)(a + 3)$ (iii) $(1 + 2x)(2 - x)$
 (iv) $3(2x - yz)(6x + 5yz)$ (v) $(a + 6)(2a - 5)$ (vi) $(5x - 10y + 3)(3x - 6y - 5)$.
9. (i) $(5x + 7)(13x - 1)$ (ii) $(a - b - c)(a - b + c)$ (iii) $(5 - p - q)(5 + p + q)$
10. (i) $(4m + 5)(m + 2)$ (ii) $(5x - 2)(x - 6)$ (iii) $(a - 7b)(2a - 3b)$
 (iv) $(a + b - 7)(a + b - 6)$ (v) $(4x + 6y + 1)(1 - 6x - 9y)$ (vi) $(2x + 2y + 1)(7 - 4x - 4y)$.