

Factorise each of the expressions

53. (i) $27x^3 - y^3$ (ii) $x^3 - 64$
Diff

$$(i) (3x - y)(9x^2 + 3xy + y^2)$$

$$(ii) (x - 4)(x^2 + 4x + 16)$$

Difference of 2 Cubes $x^3 - y^3 = (x - y)(x^2 + xy + y^2)$

Sum of 2 Cubes $x^3 + y^3 = (x + y)(x^2 - xy + y^2)$

Factorise each of the expressions

53. (iii) $8x^3 - 27y^3$

$$(2x - 3y)(4x^2 + 6xy + 9y^2)$$

Difference of 2 Cubes $x^3 - y^3 = (x - y)(x^2 + xy + y^2)$

Sum of 2 Cubes $x^3 + y^3 = (x + y)(x^2 - xy + y^2)$

Factorise each of the expressions

54. (i) $8 + 27k^3$

(ii) $64 - 125a^3$

$$(i) (2+3k)(4-6k+9k^2)$$

$$(ii) (4-5a)(16+20a+25a^2)$$

$$5(a)(a) = 5a^2$$

$$(5a)(5a) = 25a^2$$

Difference of 2 Cubes $x^3 - y^3 = (x-y)(x^2 + xy + y^2)$

Sum of 2 Cubes $x^3 + y^3 = (x+y)(x^2 - xy + y^2)$

Factorise each of the expressions

54. (iii) $27a^3 + 64b^3$

$$(3a+4b)(9a^2-12ab+16b^2)$$

Factorise each of the expressions

55. (i) $a^3 - 8b^3c^3$

(ii) $5x^3 + 40y^3 = 5(\underline{x^3 + 8y^3})$

(i) $(a - 2bc)(a^2 + 2abc + 4b^2c^2)$

(ii) $5(x + 2y)(x^2 - 2xy + 4y^2)$

Factorise each of the expressions

55. (iii) $(x+y)^3 - z^3$

$$a^3 - b^3 = (a - b)(a^2 + ab + b^2)$$

$$= (x+y-z) \left(\underline{(x+y)^2} + z(x+y) + z^2 \right)$$

$$= (x+y-z) (x^2 + 2xy + y^2 + zx + zy + z^2)$$

Squaring a binomial

$$(x+y)^2 = \overset{\text{wrong!}}{x^2 + y^2}$$

$$(x+y)(x+y)$$

$$x(x+y) + y(x+y)$$

$$x^2 + xy + xy + y^2$$

$$(x+y)^2 = x^2 + 2xy + y^2 \quad \text{Formula}$$

eg. 1 $(3x+2y)^2$

$$= 9x^2 + 12xy + 4y^2$$

Formula $(a+b)^2 = a^2 + 2ab + b^2$

eg.2 $(4a + 3b)^2$

$$= 16a^2 + 24ab + 9b^2$$

eg.3 $(3x - 2y)^2$

$$= 9x^2 - 12xy + 4y^2$$

eg.4 $(2a - 5b)^2$

$$= 4a^2 - 20ab + 25b^2$$