

27-8-2024

Unit 4

Ex 4.2

i) $x^3 - 125$

$$x^3 - (5)^3 \quad \therefore a^3 - b^3 = (a-b)(a^2 + ab + b^2)$$

$$(x-5)(x^2 + x5 + 5^2)$$

$$(x-5)(x^2 + 5x + 25) \text{ Ans}$$

ii) $8x^3 + 1$

$$(2x)^3 + (1)^3$$

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

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

$$(2x+1)(4x^2 - 2x + 1) \text{ Ans}$$

iii) $3p^3q^3 - 81x^3$

$$3(p^3q^3 - 27x^3)$$

$$3[(pq)^3 - (3x)^3]$$

$$3[(pq)^3 - (3x)^3]$$

$$3(pq - 3x)[(pq)^2 + pq(3x) + (3x)^2]$$

$$3(pq - 3x)(p^2q^2 + 3pqx + 9x^2) \text{ Ans}$$

27-8-24024

Homework

Mat1

iv) $64(x+y)^3 - z^2$ $27 + 512x^3$

$$3(3)^3 + (8x)^3$$

$$(3+8x)((3)^2 + (3)(8x) + (8x)^2)$$

$$(3+8x)(9 - 24x + 64x^2) \text{ Ans.}$$

v) $t^6 - 64$

$$(t)^3 - (4)^3$$

$$(t-4)[(t)^2 + (t)(4) + (4)^2]$$

$$(t-4)(t^2 + 4t + 16) \text{ Ans.}$$

Q6 $x^6 + y^6$

$$(x^2)^3 + (y^2)^3$$

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

$$(x^2 + y^2)[(x^2)^2 - (x^2)(y^2) + (y^2)^2]$$

$$(x^2 + y^2)[x^4 - x^2y^2 + y^4] \text{ Ans.}$$

Q7 $(2-x)^3 + (y-2)^3$

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

$$[(2-x) + (y-2)][(2-x)^2 - (2-x)(y-2) + (y-2)^2]$$

$$[(2-x) + (y-2)][(2-x)^2 - (2-x)(y-2) + (y-2)^2]$$

$$[(y-x)][(2-x)^2 - (2-x)(y-2) + (y-2)^2]$$

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

$$[(y-x)][(2-x)^2 - (2-x)(y-2) + (y-2)^2]$$

$$y^2 + 2^2 - 2(y)(2)$$

$$(y-x)[4 + x^2 - 4x - 2y + 4 + xy - 2x + y^2 + 4 - 4y]$$

$$(y-x)[12 + x^2 - 4x - 2y + 4 + xy - 2x + y^2 + 4 - 4y]$$

$$(y-x)[12 + x^2 - 6x - 6y + y^2 + xy]$$

$$(y-x)[x^2 + y^2 - 6x - 6y + xy + 12]$$

29-8-2024

Homework

Math

Unit 4

8) $64(x+y)^3 - z^3$

$$4^3(x+y)^3 - z^3$$

$$[4(x+y)]^3 - z^3$$

$$(4x+4y)^3 - z^3$$

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

$$(4x+4y-z)[(4x+4y)^2 + (4x+4y)(z) + (z)^2]$$

$$(4x+4y-z)[(4x)^2 + (4y)^2 + 2(4x)(4y) + 4xz + 4yz + z^2]$$

$$(4x+4y-z)(16x^2 + 16y^2 + 32xy + 4xz + 4yz + z^2) \text{ Ans}$$

9) $27p^3 + 144pq^2 - 108p^2q - 64q^3$

$$27p^3 - 108p^2q + 144pq^2 - 64q^3$$

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

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

$$(3p - 4q)^3 \text{ Ans}$$

$$10) \quad 8p^3 + q^3 + 12p^2q + 6pq^2$$

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

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

$$(2p+q)^3 \text{ Ans.}$$

$$11) \quad 125x^3 - y^3 - 75x^2y + 15xy^2$$

$$(5x)^3 - (y)^3 - 75x^2y + 15xy^2$$

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

$$(5x)^3 - (y)^3 - 3(5x)^2(y) + 3(5x)(y)^2$$

$$(5x-y)^3 \text{ Ans.}$$

$$12) \quad p^3 - 9p^2q + 27pq^2 - 27q^3$$

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

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

$$(p-3q)^3 \text{ Ans.}$$

$13) \quad (2x^2 - 3x + 6)(2x^2 - 3x - 5) - 55$ $\text{Let } 2x^2 - 3x = a$ $(a+6)(a-5) - 55$ $a^2 + 6a - 5a - 55$ $a^2 + 11a - 5a - 55$ $a(a+11) - 5(a+11)$ $(a+11)(a-5)$	Replacing back $a = 2x^2 - 3x$ $(2x^2 - 3x + 11)(2x^2 - 3x - 5)$ $(2x^2 - 3x + 11)(2x^2 - 5x + 2x - 5)$ $(2x^2 - 3x + 11) \times (2x - 5) + 1(2x - 5)$ $(2x^2 - 3x + 11)(x+1)(2x-5)$
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30-8-2024

homework

Unit 4

Ex 4.2

(14) $(y^2+2y-3)(y^2+2y+11)+48$

Let $y^2+2y=a$

$(a-3)(a+11)+48$

$a^2+8a-33+48$

$a^2+8a+15$

$a^2+5a+3a+15$

$a(a+5)+3(a+5)$

$(a+5)(a+3)$ Ans.

replace $a=y^2+2y$

$(y^2+2y+5)(y^2+2y+3)$ Ans.

(15) $y(y-1)(y-3)(y-4)+2$

$y(y-4)(y-1)(y-3)+2$

$(y^2-4y)(y^2-4y+3)+2$

Let $y^2-4y=a$

$(a)(a+3)+2$

a^2+3a+2

$a^2+2a+1a+2$

$a(a+2)+1(a+2)$

$(a+2)(a+1)$

Replace back

$(y^2-4y+2)(y^2-4y+1)$ Ans.

$$16) (K+2)(K-3)(K+5)(K+10)+375$$

$$(K+5)(K+2)(K-3)(K+10)+375$$

$$= (K^2+7K+10)(K^2+7K-30)$$

$$(K^2+7K+10)(K^2+7K-30)+375$$

$$\text{Let } K^2+7K=a$$

$$(a+10)(a-30)+375$$

$$a^2-20a-300+375$$

$$a^2-20a+75$$

$$a^2-15a-5a+75$$

$$a(a-15)-5(a-15)$$

$$(a-15)(a-5)$$

Replace back

$$(K^2+7K-15)(K^2+7K-5)$$

$$(17) (x-5)(x-6)(x+3)(x+12)+12$$

$$(x-5)(x+2)(x-6)(x+3)+12$$

$$(x^2-3x-10)(x^2-3x-18)+12$$

$$\text{let } x^2-3x=a$$

$$(a-10)(a-18)+12$$

$$(a^2-28a+180)+12$$

$$a^2-28a+192$$

$$a^2-(12+16a)+192$$

$$a^2-12a-16a+192$$

$$a(a-12)-16(a-12)$$

$$(a-12)(a-16)$$

Replace back

$$(x^2-3x-12)(x^2-3x-16) \text{ Ans.}$$

$$18) (x+1)(x+2)(x-3)(x-6) - 21x^2$$

$$(x+1)(x-6)(x+2)(x-3) - 21x^2$$

$$(x^2-5x-6)(x^2-1x-6) - 21x^2$$

$$(x^2-6-5x)(x^2-6-1x) - 21x^2$$

let $x^2-6=a$

$$(a-5x)(a-1x) - 21x^2$$

$$a^2 - 6ax + 5x^2 - 21x^2$$

$$a^2 - 6ax - 16x^2$$

$$a^2 - 8ax + 2ax - 16x^2$$

$$a(a-8x) + 2x(a-16x)$$

$$a(a-8x) + 2x(a-8x)$$

$$(a-8x)(a+2x)$$

Replace back

$$(x^2-6-8x)(x^2-6+2x) \text{ Ans.}$$

$$19) (x-2)(x-6)(x-3)(x-4) - 2x^2$$

$$(x^2-8x+12)(x^2-7x+12) - 2x^2$$

$$(x^2+12-8x)(x^2+12-7x) - 2x^2$$

let $x^2+12=a$

$$(a-8x)(a-7x) - 2x^2$$

$$a^2 - 15ax + 56x^2 - 2x^2$$

$$a^2 - 15ax + 54x^2$$

$$a^2 - 9ax - 6ax + 54x^2$$

$$a(a-9x) - 6x(a-9x)$$

$$(a-9x)(a-6x)$$

Replace back

$$(x^2+12-9x)(x^2+12-6x) \text{ Ans.}$$