**Chapter-4**

**Algebraic identities**

**Important Formulae**

**1.** (a+b)2 = a2 + 2ab + b2

**2.** (a–b)2 = a2 – 2ab + b2

**3.** (a+b)2 = (a – b)2 + 4ab

**4.** (a–b)2 = (a + b)2 – 4ab

**5.** (a+b)3 = a3 + b3 + 3ab(a+b)

**6.** (a–b)3 = a3 – b3 – 3ab(a–b)

**7.** (a3 + b3) = (a + b) (a2 – ab + b2)

**8.** (a3 – b3) = (a – b) (a2 + ab + b2)

**9.**  (a+b+c)2 = a2 +b2+c2+2(ab+bc+ca)

**10.**  a3 + b3+c3 – 3abc = (a+b+c) (a2+b2+c2 –ab –bc– ca)

If a+b+c = 0, then a3 +b3 + c3 = 3abc

**11.** If x+ = p, then x2 + = p2 – 2

**12.** If x+ = p, then x3+ = p3 – 3p

**13.** If x+ = p, then x4+ = p4 – 4p2 + 2

**14.** If x+ = p, then x5 +  = p5 – 5p3 + 5p

**15.** If x+ = p, then x6 +=p6 – 6p4 + 9p2– 2

**16.** If x– = p, then x2 +  = p2 + 2

**17.** If x– = p, then x3– = p3 + 3p

**18.** If x– = p, then x4 +  = p4 + 4p2 + 2

**19.** If x– = p, then x5 – = p5 + 5p3 + 5p

**20.** If x– = p, then x6 +=p6 + 6p4 + 9p2+2

**Example:** If t2 - 4t + 1 = 0, then the value of is

**Answer:** t2 - 4t + 1 = 0

t3 + 1 = 4t







**Example:** If, then the value of x is

**Answer:**by option (d), putting x = 4 we get



**=**

+ 5

**Example:** If x2 = y+z,y2=z+x and z2 =x+y, then the value of is

**Answer:** x2 =y+z

x2+x = x+y+z

x(x+1) = x+y+z-------- (i) Similarly,

y(y+1) = x+y+z-------- (ii)

and z(z+1)= x+y+z ----- (iii)



= =

**Example:**  is equal to

**Answer:** 

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