**SAINIK SCHOOL GOPALGANJ**

**SUMMER VACATION ASSIGNMENT**

**SUBJECT: MATHEMATICS**

**CLASS: IX**

**Chapter : 2**

**Polynomials**

1. To verify the algebraic identity : (a+b)3= a3+3ab(a+b) +b3 .

2. Factorise : 125x3 – 64y3

3. If p(x)= x2 – 2√2x+1, then find the value of p(2√2)

4. Find the value of m, if x + 4 is a factor of the polynomial x2 + 3x + m.

5. Find the remainder when x3+ x2 + x + 1 is divided by x – 1/2 using remainder theorem.

6. Expand :  
(i) (y – √3)2  
(ii) (x – 2y – 3z)2

7. If x + = 1/x = 7, then find the value of x3 + 1/x3

8. Show that p – 1 is a factor of p10 + p8 + p6 – p4 – p2 – 1.

9. If 3x + 2y = 12 and xy = 6, find the value of 27x3+ 8y3

10. Factorise : 4x2 + 9y2 + 16z22 + 12xy – 24 yz – 16xz.

11. Factorise : 1 – 2ab – (a2 + b2).

12 Factorise :  
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13. Factorise 64a3 – 27b3 – 144a2b + 108ab2.

14. What are the possible expressions for the dimensions of a cuboid whose volume is given below ?  
Volume = 12ky2 + 8ky – 20k.

15. If p(x) = x3 + 3x2 – 2x + 4, then find the value of p(2) + p(-2) – P(0).

16. Simplify:  
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17. Prove that (a + b + c)3 – a3 – b3 – c3 = 3(a + b) (b + c) (c + a).

18. Factorise : (m + 2n)2 x2 – 22x (m + 2n) + 72.

19. If x – 3 is a factor of x2 – 6x + 12, then find the value of k. Also, find the other factor of the – polynomial for this value of k.

20. Find a and b so that the polynomial x3– 10x2 + ax + b is exactly divisible by the polynomials (x – 1) and (x – 2).