POLYNOMIALS OVER INTEGERS

1. Product of the roots of equation
   $x^2-(a+b)x = c$ is _____
2. If α, β are the roots of the equation
   $2x^2-9x+8 = 0$ then $\alpha + \beta$ = _____
3. The line $y = mx+c$ cuts the y-axis at _____
4. The curve $x = my^2 (m>0)$ lies in _____ quardrants (March 2008, Jun 2010)
5. If the co-efficient of x^2 in the expansion of $(1+x)^n$ is 28 then n = _____
6. If $f(x) = a_0x+a_1x+a_2x^2+a_3x^3+$_____. If $a_0 + a_2 + a_4 + \text{-----} = a_1 + a_3 + a_5 + \text{-----}$ then the factor of f(x) is _____
7. If $15C_{r-1} = 15C_{r+2}$ then r = _____
8. If $|3x - 2|=10$ then the positive value of
   'x' is _____
9. $a^2 + bx + c = 0$ is quadratic equation if
   $b^2 - 4ac < 0$ then the roots are _____
10. The no.of terms of the expansion $(1+x)^{n+1}$ is 6 then n = _____
11. The sum of the roots of $2x^2 - Kx + 4 = 0$ is -1 then K = _____
12. (x-1) is a factor of $2x^3 - 5x^2 + Kx + 7$ then K = _____
13. The last term in the expansion of $\left(1-\frac{1}{\sqrt{x}}\right)^8$ is _____
14. The quadratic equation in 'x' where roots are 2, –3 is _____
15. If $x^2 - 3x + 2 > 0$ then x is _____
16. The solution set which satisfies the inequation $x^2 - 4x + 3 < 0$ is _____
17. The ineaquation with solution set $1 < x < 3$ is _____(June 2008)
18. Product of the roots of $2x^2 + 3x - 2 = 0$ is _____
19. The condition for $x^y + y^n$ is exactly divisible by (x+y) then n = _____
20. If (2,K) lies on $y = 2x^2 - 3$ then K = _____
21. The two factors of $x^3 + 3x^2 - x - 3$ are
    $(x - 1)(x+1)$ then the other factor is _____
22. The rationalising factor of $a^{1/3}-b^{1/3}$ is _____
23. Sum of the binomial co-efficients of the expansion $(x + y)^4$ is _____
24. If $(x - y)$ is a factor of $x^n - y^n$ then n is _____ (June 2007)
25. $Y= mx^2 (m>0)$ is symmetric about ___axis.
26. The roots of $2x^2 + Kx + 2 = 0$ are equal then K = _____
27. The standard form of second degree homogenous equation in two variables x and y is _____
28. $x^3 - 2x^2 + 4x - 5$ is divided by x–2 then the remainder is _____
29. If f(x) is divided by ax+b then the remainder is _____ (March 2010)
30. Second term in the expansion of $\left(x-\frac{1}{x}\right)^4$ is _____
31. If the roots of the equation $Px^2 + qx + r = 0$ equal then the condition is _____
32. To solve graphically the roots of $x^2 + 2x - 15 = 0$ we draw $y = x^2$ and _____
33. The other name of pascal triangle is _____
34. If $(x + y, 1) = (3, y - x)$ then (x,y) = _____
35. The descrimenent of $4x^2 - 5x + 4 = 0$ is _____
36. If $f\left(\frac{b}{a}\right)=0$ then factor of f(x) = _____
37. The sum of the co-efficients of the quadratic expression is zero then _____ is a factor to it (June 2010)
38. The graph of $y = x^2$ is a _____
39. If 2 is a root of the equation $x^2 - px + q = 0$ and $p^2 = 4q$ then the other root is _____
40. The roots of $ax^2 + bx + c = 0$ are _____
41. If $x^3 - 3x^2 + 4x - 2$ is divided by x–1, then the quotient is _____ (June 2009)
42. The nature of the roots of $4x^2 - 5x + 4 = 0$ is _____
43. The product of the roots of $\sqrt{3}x^2+9x+6\sqrt{3}=0$ is _____
44. n_{C_0} = _____ (March 2009)
45. $(-2, 3) \in$ _____ quadrant (March 2009)
46. The sum of the roots of $x^2 - 3x + 7 = 0$ is _____
47. The discriminant of the quadratic equation $2x^2 - 7x + 3 = 0$ is _____ (June 2008)
48. If $\sqrt{x+1}=x$ then x = _____June 2008)
49. The product of the roots of $px^2 + qx + r = 0$ _____ (June 2008)
50. Middle term in the expansion of $\left(\frac{x}{y}+\frac{y}{x}\right)^8$ is _____ (March 2008)
51. If $(a + b, 1) = (5, a - b)$ then $2a + 3b$ = _____ (March 2006)
52. (x+1) is a factor to $ax^4 + bx^3 + cx^2 + dx + e$ then the condition is _____
53. If $|x| \le a$ then the solution set is _____

54. The middle term of $\left(\frac{x}{y}+\frac{y}{x}\right)^4$ expansion is _____ (March 2010)

55. Sum of the number and its reciprocal is 17/4 then the number is _____

56. Expand $\Sigma a^2(b-c) =$ _____

KEY

1. -C 2. 9/2 3. (0,c) 4. I & III quadrants 5. 8 6. (x+1) 7. 7 8. 4 9. not real & complex
10. 4 11. -2 12. -4 13. $1/x^4$ 14. $x^2+x-6 = 0$ 15. doesnot lies between 1 and 2
16. $1<x<3$ 17. $x^2-4x+3<0$ 18. -1 19. any odd natural number 20. 5 21. (x+3) 22. $(a^{2/3} + a^{1/3}b^{1/3} + b^{2/3})$
23. 16 24. any natural number 25. positive y-axis 26. ±4 27. $ax^2+2hxy+by^2$ 28. 3
29. $f\left(\frac{-b}{a}\right)$ 30. $-4x^2$ 31. $q^2 = 4pr$ 32. $y = -2x+15$ 33. Arithmetic triangle 34. (1,2) 35. -39
36. ax-b 37. (x-1) 38. parabola 39. 2 40. $\frac{-b\pm\sqrt{b^2-4ac}}{2a}$ 41. x^2-2x+2
42. not real and complex 43. 6 44. 1 45. II 46. 3 47. 25
48. $\frac{1\pm\sqrt{5}}{2}$ 49. r/p 50. 5^{th} term (70) 51. 12 52. a+c+e = b+d 53. $-a \le x \le a$ 54. 3^{rd} term (6)
55. 4 56. $a^2(b–c) + b^2(c–a) + c^2(a–b)$

POLYNOMIALS:
Important Questions

5 Marks

1. Using graph of $y = x^2$, solve $x^2 – 4x+3 = 0$
2. Draw the graph of $y = x^2 + 5x + 6$ and find the solution of $x^2 + 5x + 6 = 0$?

4 Marks

1. If $ax^2 + bx + c$ is exactly divisible by (x-1), (x-2) and leaves remainder 6 when divided by (x+1). find a,b and c?
2. Resolve in to factors of the polynomial
   $3x^4 – 10x^3 + 5x^2 + 10x – 8$?
3. Find the independent term of ‘x’ in the
   expansion of $\left(6x^2-\frac{5}{x^2}\right)^8$?
4. Find a quadratic function is in ‘x’ such that when it is divided by (x-1),(x-2) and (x-3) leaves remainders 1,2 and 4 respectively.

2 Marks

1. Find the value of ‘m’ in order that $x^4 –2x^3 + 3x^2–mx+5$ may be exactly divisible by(x-3)?
2. Find the roots of $x^2+x (c-b)+(c-a) (a-b) = 0$.
3. Find the middle term of the expansion of
   $\left(3x-\frac{1}{2x}\right)$?
4. Solve the inequation $x^2 – 6x + 8 > 0$?
5. The difference of two numbers is 5 and their product is 84 find them?
6. Find the 5^{th} term in the expansion $\left(2x+\frac{1}{3y}\right)^8$

1 Mark

1. Define mathematical induction?
2. Comment up on the roots of a quadratic equation $3x^2 – 7x + 2 = 0$?
3. Find the quadratic equation having roots $1+\sqrt{2}$ and $1-\sqrt{2}$?
4. Find the value of K so that $x^3 – 3x^2 + 4x + K$ is exactly divisible by x-2?
5. Find the sum and product of the roots of the equation $\sqrt{3}x^2+9x+6\sqrt{3}=0$?
6. Define Remainder theorem?
7. The product of two consecutive numbers is 72. Find the number?
8. Write factor theorem?
9. Expand $\Sigma a(a+b-c)$?
10. Write General term of expression $(x+y)^n$?