

Octahedral classes, kharadi
2nd floor, yashwant plaza, near bank of India,

Class 10 - Mathematics
REAL NO AND POLYNOMIAL

Maximum Marks: 50

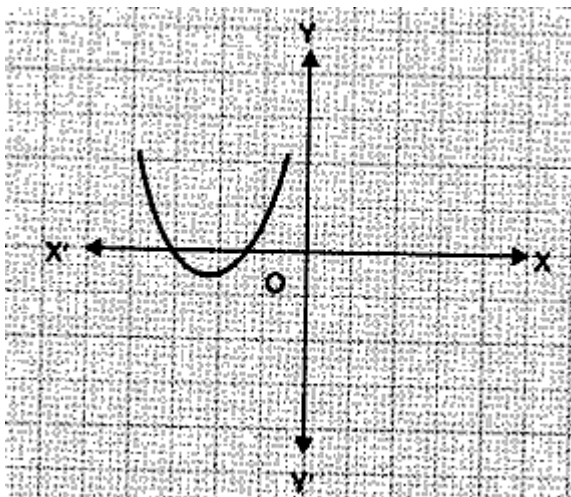
Time Allowed: 2 hours

General Instructions:

ANSWER ALL QUESTIONS

Section A

1. Find the LCM and HCF of 17, 23 and 29 by applying the prime factorization method. 1
2. Determine the prime factorisation of 20570 positive integer. 1
3. Find the LCM of the following polynomials: 1
 $(2x^2 + 3)(x + 3)$ and $(x + 3)^2(2x^2 + 3)^2$
4. State whether the following rational number will have a terminating decimal expansion or a nonterminating repeating decimal expansion. $\frac{64}{455}$ 1
5. Express 420 as product of prime factors. 1
6. Divide $x^4 - 5x + 6$ by $2 - x^2$. 1
7. For what value of k, -2 is a zero of the polynomial $3x^2 + 4x + 2k$? 1
8. Calculate the zeroes of the polynomial $p(x) = 4x^2 - 12x + 9$. 1
9. Find all the zeroes of $f(x) = x^2 - 2x$. 1
10. The graph of $y = p(x)$ is given in figure below, for some polynomial $p(x)$. Find the number of zeroes of $p(x)$. 1



11. 15 pastries and 12 biscuit packets have been donated for a school fete. These are to be packed in several smaller identical boxes with the same number of 2

- pastries and biscuit packets in each. How many biscuit packets and how many pastries will each box contain?
12. Given that HCF of two numbers is 23 and their LCM is 1449. If one of the numbers is 161, find the other. 2
 13. In a school there are two sections - section A and section B of class X. There are 32 students in section A and 36 students in section B. Determine the minimum number of books required for their class library so that they can be distributed equally among students of section A or section B. 2
 14. Find the HCF of the following polynomials: 2
 $22x(x + 1)^2; 36x^2(2x^2 + 3x + 1)$
 15. Find the largest number that divides 2053 and 967 and leaves a remainder of 5 and 7 respectively. 2
 16. If α and β are the zeros of the quadratic polynomial $f(x) = x^2 - x - 4$ find the value of $\frac{1}{\alpha} + \frac{1}{\beta} - \alpha\beta$ 2
 17. If α and β are the zeroes of the polynomial $4x^2 - 2x + (k - 4)$ and $\alpha = \frac{1}{\beta}$, find the value of k . 2
 18. Find a quadratic polynomial of the given numbers as the sum and product of its zeroes respectively 4, 1 2
 19. Apply division algorithm to find the quotient $q(x)$ and remainder $r(x)$ on dividing $f(x)$ by $g(x)$, where $f(x) = x^3 - 6x^2 + 11x - 6$ and $g(x) = x^2 + x + 1$ 2
 20. On dividing $x^3 - 3x^2 + 3x - 2$ by a polynomial $g(x)$ the quotient and the remainder were $x - 2$ and $-2x + 4$ respectively, find $g(x)$. 2
 21. Find the value of 'a', if $x + a$ is a factor of the polynomial $2x^2 + 2ax + 5x + 10$. 2
 22. Use Euclid's division lemma to show that the cube of any positive integer is of the form $9m$, $9m + 1$ or $9m + 8$. 3
 23. Three sets of English, Mathematics and Science books containing 336, 240 and 96 books respectively have to be stacked in such a way that all the books are stored subject wise and the height of each stack is the same. How many stacks will be there? 3
 24. A village of the North-East India is suffering from flood. A group of students decide to help them with food items, clothes etc, So the student collects some amount of rupees, which is represented by $x^4 + x^3 + 8x^2 + ax + b$ 4

- i. If the number of students is represented by $x^2 + 1$, find the values of a and b.
- ii. What values have been depicted by the group of students?
25. Obtain all other zeroes of the polynomial $4x^4 + x^3 - 72x^2 - 18x$, if two of its zeroes are $3\sqrt{2}$ and $-3\sqrt{2}$. 4
26. Find all the zeros of the polynomial $3x^4 + 6x^3 - 2x^2 - 10x - 5$ if two of its zeros are $\sqrt{\frac{5}{3}}$ and $-\sqrt{\frac{5}{3}}$. 4