

Summer Vacation Home work

Sub:- Mathematics

Class - X (2019-20)

- 1) Use Euclid's division lemma to show that the cube of any Positive integer is either of the form $9m$, $9m+1$ or, $9m+8$ for some integer m .
- 2) Find the HCF of 105 and 120.
- 3) The HCF of two numbers is 145 and their LCM is 2175. If one number is 725, find the other.
- 4) Prove that the following numbers are irrational:-
(a) $3+2\sqrt{5}$ (b) $\sqrt{2}+\sqrt{5}$ (c) $5-\sqrt{3}$ (d) $2\sqrt{3}-1$ (e) $2-3\sqrt{5}$
- 5) Has the rational number $\frac{441}{2^2 \times 5^7 \times 7^2}$ a terminating or a non terminating decimal representation?
- 6) Show that the square of any Positive integer is of the form $4m$ or $4m+1$, where m is any integer.
- 7) If α and β are the zeroes of the Polynomial $f(x) = x^2 - 5x + k$ such that $\alpha - \beta = 1$, find the value of k .
- 8) If the sum of the zeroes of the quadratic polynomial $f(t) = kt^2 + 2t + 3k$ is equal to their Product, find the value of k .
- 9) If one zero of the quadratic polynomial $f(x) = 4x^2 - 8kx - 9$ is negative of the other, find the value of k .
- 10) Find all the zeroes of the Polynomial $f(x) = 2x^4 - 3x^3 - 3x^2 + 6x - 2$, if two of its zeroes are $\sqrt{2}$ and $-\sqrt{2}$.
- 11) Obtain all other zeroes of the Polynomial $f(x) = 3x^4 + 6x^3 - 2x^2 - 10x - 5$ if two of its zeroes are $\sqrt{\frac{5}{3}}$ and $-\sqrt{\frac{5}{3}}$.
- 12) If two zeroes of the Polynomial $f(x) = x^4 - 6x^3 - 26x^2 + 138x - 35$ are $2 \pm \sqrt{3}$, find other zeroes.
- 13) If one zero of the Polynomial $f(x) = (k^2 + 4)x^2 + 13x + 4k$ is reciprocal of the other, then find the value of k .
- 14) If the Product of zeroes of the Polynomial $f(x) = ax^3 - 6x^2 + 11x - 6$ is 4, then find the value of a .

15) If the zeroes of the polynomial $x^2 + px + q$ are double in value to the zeroes of $2x^2 - 5x - 3$, find the value of p and q .

16) Solve the following system of linear equations graphically:

$$3x + y - 11 = 0, \quad x - y - 1 = 0.$$

Shade the region bounded by these lines and y -axis. Also find the area of the region bounded by these lines and y -axis.

17) Solve the following system of equations by using the method of substitution:

$$2x + 3y = 9, \quad 3x + 4y = 5.$$

18) Solve $2x + 3y = 11$ and $2x - 4y = -24$ and hence find the value of m for which $y = mx + 3$.

19) A fraction becomes $\frac{9}{11}$ if 2 is added to both numerator and the denominator. If 3 is added to both numerator and denominator it becomes $\frac{5}{7}$. Find the fraction.

20) The sum of the digits of a two-digit number is 9. Also, nine times this number is twice the number obtained by reversing the order of the digits. Find the number.

