Summer Vacation Holiday Homework

Class – IX

Subject - Mathematics

Q1. State whether the following statements are true or False

(a) There are infinitely many integers between any two integers.

(b) Irrational numbers are those numbers which cannot be written in the form of p/q, $q \neq 0$, p, q both are integers.

(c) $\frac{\sqrt{18}}{\sqrt{2}}$ is not a rational number as $\sqrt{18}$ and $\sqrt{2}$ are irrational.

Q 2. Find the value of each of the following:

(a) $625^{-3/4}$ (b) $15\sqrt{6} + \sqrt{216}$ (c) $\frac{\sqrt{162}}{\sqrt{2}}$ (d) $\frac{1+\sqrt{2}}{1-\sqrt{2}}$

Q 3. Simplify the following expression

(a) $\frac{1}{1-\sqrt{2}+\sqrt{3}}$ (b) $\frac{1}{\sqrt{3}-\sqrt{2}}$ (c) $\frac{5+\sqrt{2}}{5-\sqrt{2}} + \frac{5-\sqrt{2}}{5+\sqrt{2}}$

Q 4. Find the value of a and b such that $\frac{5+\sqrt{3}}{7+2\sqrt{3}} = a - b\sqrt{3}$

Q 5. If $p = 1+\sqrt{3}$, then find the value of $p^2 + \frac{1}{p^2}$

Q 6. Represent the following numbers on number line

(a) $\sqrt{20}$ (b) $\sqrt{5.2}$

Q 7. Give an example each of two irrational numbers, whose

(a) Difference is a rational number
(b) Difference is an irrational number
(c) Product is a rational number
(d) Quotient is an irrational number

Q 8. Without actual division decide which of the following rational numbers have terminating decimal representation

(a) $\frac{33}{375}$ (b) $\frac{15}{28}$ (c) $\frac{16}{45}$ (d) $\frac{123}{1250}$

Q 9. Insert 6 rational numbers between $\frac{-2}{3}$ and $\frac{3}{4}$

Q 10. Find two irrational numbers between $\sqrt{3}$ and 2.

Q 11. Visualize 2.8765 on the number line, using successive magnification.

Q 12. Express the following numbers in the $\frac{p}{q}$ form

(a) $0.2\overline{35}$ (b) $0.\overline{3}$ (c) $2.3\overline{49}$ (d) $0.\overline{123}$ (e) $0.\overline{12}$ (f) $2.8\overline{768}$

Q 13. Write a trinomial of degree 135.

Q 14. Write degree of the following polynomials

(a) 4x-2 (b) $44x^4$+5x+7 (c) $125z^{35}$-100

Q 15. Find the coefficient of x^2 in the polynomial $5x^3$ -$6x^2$+9x-5

Q 16. The degree of 4- $4y^8$ is ---------.

Q 17. The degree of 3 is ---------.

Q 19. The zero of P(x) = 2x-7 is-------.

Q 20. On dividing x^3 +$3x^2$+3x+1 by x we get remainder--------.

Q 21. On dividing x^3 +$3x^2$+3x+1 by 5+2x we get remainder--------.

Q 23. If x-2 is a factor of x^3-3x+5a then find the value of a.

Q 25. Factorise the followings

(a) $3x^2$-x-4
(b) $12x^2$-7x+1
(c) $6x^2$+5x-6
(d) x^3 -$2x^2$-x+2
(e) x^3+1

Q26.The number of the zeroes of the polynomial $5x^3$ -$6x^2$+9x-5 is--------.

Q 27. If (x+2) and (x-2) are the factors of ax^4+2x-$3x^2$+bx-4, then find the value of a+b.

Q 28. State and prove Remainder theorem.

Q 29. State and prove Factor theorem.

Q 30. If the polynomial az^3+$4z^2$+3z-4 and z^3-4z+a leave the same remainder when divided by z-3, Find the value of a.

- Revise chapter 1 and 2 and also do in notebook.