HOLIDAY HOMEWORK Class - X

(1) Prove that $\sqrt{2}+\sqrt{3}$ is an irrational.

(2) If a, b are two Prime no's. The find the LCM (a, b).

(3) If α, and β are the zeros of the quadratic Polynomial $f(x) = ax^2+bx+c$, then calculate:

(i) $\alpha^2+\beta^2$ (ii) $\frac{\alpha^2}{\beta}+\frac{\beta^2}{\alpha}$

(4) Check whether the polynomial (t^2-3) is a factor of the Polynomial $2t^4+3t^3-2t^2-9t-12$, by dividing the second Polynomial by the first Polynomial.

(5) Find all the zeros of $2x^4-3x^3-3x^2+6x-2$, if you know that two of it's zeros are $\sqrt{2}$ and $-\sqrt{2}$.

(6) If the equation $2x^2+kx+6=0$ have two equal roots, find the value of k.

(7) What is the co-ordinates of centre if the end points of a diameter is (6, 8) and (-2, -2).

(8) Find the two numbers whose sum is 27 and Product 182,.

(9) Find the 30th term of the AP: 10, 7, 4, ...

(10) If $2x, x+10, 3x+2$ are in A.P. Find the value of x.

(11) Find the distance of the point (-2, 6) from origin.

(12) Find the sum of $34+32+30+\ldots\ldots+10$

(13) For what value of n, are the nth terms of two APs: 63, 65, 67, ... and 3, 10, 17 ... equal?

(14) Find the area of triangle whose vertices are :-

(i) (2,3), (-1,0) (2,-4)

(15) Find the value of k for which the points are collinear.

(i) (7,-2), (5,1), (3,k)

(ii) (8,1) (k,-4) (2,-5)

(16) Find the area of the triangle formed by joining the mid-points of the sides of the triangle whose vertices are (0,-1), (2,1) and (0,3). Find the ratio of this area of the given triangle.

(17) Find the distance b/w the following points

(i) (a,b) (-a,-b)

(18) Solve the following pair of linear equations -

(i) $x+y=14$ $\quad x-y=4$

(ii) $3x-y=3$ $\quad 9x-3y=9$

(19) State and Prove the Pythagoras theorem.

(20) Find the perpendicular distance of A(6,-10) from Y axis.

Q.N. Without using tables, evaluate : $\frac{\sin 53^\circ}{\cos 37^\circ}$

Q.N. Without using tables, show that –

$(\cos 35^\circ \cos 55^\circ - \sin 35^\circ \sin 55^\circ) = 0$.

Q.N. Prove following identities –

(i) $(\operatorname{cosec}\theta - \cot\theta)^2 = \frac{1-\cos\theta}{1+\cos\theta}$

(ii) $\frac{\cos A}{1+\sin A} + \frac{1+\sin}{\cos A} = 2\sec A$

Q.N. Diagonals AC and BD of a trapezium ABCD with AB || DC intersect each other at the point O. Using a similarity criterion for two triangle, show that

$\frac{OA}{OC} = \frac{OB}{OD}$

Q.N. The perpendicular from A on side BC of a ΔABC intersect BC at D such that $DB = 3CD$.

Prove that $2AB^2 = 2AC^2 + BC^2$