

Guru Har Rai Academy

Holiday home work

Class X

MATHEMATICS

Q.1:- Prove the following :-

$$\text{i) } (\sin\theta + \operatorname{cosec}\theta)^2 + (\cos\theta + \sec\theta)^2 = 7 + \tan^2\theta + \cot^2\theta \quad \text{(xi) } \cot\theta - \tan\theta = \frac{2\cos^2\theta - 1}{\sin\theta \cdot \cos\theta}$$

$$\text{ii) } (\sin\theta + \sec\theta)^2 + (\cos\theta + \operatorname{cosec}\theta)^2 = (1 + \sec\theta \cdot \operatorname{cosec}\theta)^2 \quad \text{(xii) } \frac{\tan\theta}{\sec\theta - 1} + \frac{\tan\theta}{\sec\theta + 1} = 2\operatorname{cosec}\theta$$

$$\text{iii) } \frac{\sec\theta - \tan\theta}{\sec\theta + \tan\theta} = 1 - 2\sec\theta \cdot \tan\theta + 2\tan^2\theta \quad \text{(xiii) } \frac{\tan\theta}{\frac{\sin^3\theta}{\cos\theta} + \sin\theta \cdot \cos\theta} = 1$$

$$\text{iv) } \cot^4\theta - 1 = \operatorname{cosec}^4\theta - 2\operatorname{cosec}^2\theta \quad \text{(xiv) } \frac{1 + \cos\theta - \sin^2\theta}{\sin\theta(1 + \cos\theta)} = \cot\theta$$

$$\text{v) } \sin^4\theta + \cos^4\theta = 1 - 2\sin^2\theta \cdot \cos^2\theta \quad \text{(xv) } \frac{\operatorname{cosec}\theta}{\operatorname{cosec}\theta - 1} + \frac{\operatorname{cosec}\theta}{\operatorname{cosec}\theta + 1} = 2 + 2\tan^2\theta$$

$$\text{vi) } \sin^6\theta + \cos^6\theta + 3\sin^2\theta \cdot \cos^2\theta = 1 \quad \text{(xvi) } \sqrt{\frac{1 + \sin^2\theta \cdot \sec^2\theta}{1 + \cos^2\theta \cdot \operatorname{cosec}^2\theta}} = \tan\theta$$

$$\text{vii) } \frac{\tan^2\theta}{(\sec\theta - 1)^2} = \frac{1 + \cos\theta}{1 - \cos\theta} \quad \text{(xvii) } \frac{\cos\theta}{1 - \sin\theta} + \frac{\sin\theta}{1 - \cos\theta} + 1 = \frac{\cos\theta \sin\theta}{(1 - \sin\theta)(1 - \cos\theta)}$$

$$\text{viii) } \frac{(1 + \cot A + \tan A)(\sin A - \cos A)}{\sec^3 A - \operatorname{cosec}^3 A} = \sin^2 A \cdot \cos^2 A \quad \text{(xviii) } (\operatorname{cosec}\theta - \cot\theta)^2 = \frac{1 - \cos\theta}{1 + \cos\theta}$$

$$\text{ix) } \tan^4\theta + \tan^2\theta = \sec^4\theta - \sec^2\theta \quad \text{(xix) } \frac{\cos^2\theta}{1 - \tan\theta} + \frac{\sin^3\theta}{\sin\theta - \cos\theta} = 1 + \sin\theta \cdot \cos\theta$$

$$\text{x) } \sqrt{\frac{1 - \cos\theta}{1 + \cos\theta}} = \frac{\sin\theta}{1 + \cos\theta} \quad \text{(xx) } \tan^2 A \cdot \sec^2 B - \sec^2 A \cdot \tan^2 B = \tan^2 A - \tan^2 B$$

Q-2. If $\cos\theta + \sin\theta = \sqrt{2}\cos\theta$, show that:- $\cos\theta - \sin\theta = \sqrt{2}\sin\theta$

Q-3. If $\cos\theta + \cos^2\theta = 1$, prove that-

$$\sin^{12}\theta + 3\sin^{10}\theta + 3\sin^8\theta + \sin^6\theta + 2\sin^4\theta + 2\sin^2\theta - 2 = 1$$

Q-4. If $\tan A = n \tan B$ and $\sin A = m \sin B$, prove that:- $\cos^2 A = \frac{m^2 - 1}{n^2 - 1}$

Q-5. If $\cot\theta + \tan\theta = x$ and $\sec\theta - \cos\theta = y$ prove that:- $(x^2 y)^{2/3} - (y^2 x)^{2/3} = 1$

Q-6. If $a \cos\theta - b \sin\theta = c$, prove that:- $a \sin\theta + b \cos\theta = \pm \sqrt{a^2 + b^2 - c^2}$

Q7. A number X is selected from the numbers 1,2,3 and then a second card Y is randomly selected from the numbers 1,4,9. What is the probability that the product XY of the two numbers will be less than 9?

Q8. A jar contains 54 marbles each of which is blue, green or white. The probability of selecting a blue marble at random from the jar is $\frac{1}{3}$ and the probability of selecting a green marble at random is $\frac{4}{9}$. How many white marbles does the jar contain?

Q9. A box contains 90 discs which are numbered from 1 to 90. If one disc is drawn at random from the box, find the probability that it bears i) a two digit no. (ii) a perfect square (iii) a no. divisible by 5. Q10. A dice is rolled once, find the probability of getting (i) a perfect square (ii) an even no. (iii) a no. < 5 (iv) not an even no.

Q-11. If $A = \begin{bmatrix} 2 & 5 \\ 1 & 3 \end{bmatrix}$, $B = \begin{bmatrix} 4 & -2 \\ -1 & 3 \end{bmatrix}$ and I is the identity matrix of the same order and A^t is the transpose of matrix A. find $A^t B + BI$.

Q-12. Solve the matrix equation -:

$$\begin{pmatrix} x^2 \\ y^2 \end{pmatrix} - 3 \begin{pmatrix} x \\ 2y \end{pmatrix} = \begin{pmatrix} -2 \\ 9 \end{pmatrix}$$

Q13. Find a matrix A, if $A \begin{bmatrix} 2 & 3 \\ 4 & 5 \end{bmatrix} = \begin{bmatrix} 0 & -4 \\ 10 & 3 \end{bmatrix}$

Q14. If $A = \begin{bmatrix} a-b & 2a+c \\ 2a-b & 3c+d \end{bmatrix}$ and $B = \begin{bmatrix} -1 & 5 \\ 0 & 13 \end{bmatrix}$ given $A=B$, find a, b, c and d

Q15. If $A = \begin{bmatrix} 2 & -2 \\ -3 & 4 \end{bmatrix}$, then find -: $A^2 + 6A$

Q-16. If $x-1$ is a factor of $Ax^3 + Bx^2 - 36x + 22$ and $2^B = 64^A$, then find the values of A and B.

Q-17. Use

remainder theorem to factorise the given expression: $2x^3 + x^2 - 13x + 6$

Q-18. What number must be added to $4x^3 - 8x^2 + 3x$ so that the resulting polynomial has a factor $2x + 1$?

Q-19. Prove that $5x + 4$ is a factor of $5x^3 + 4x^2 - 5x - 4$. Hence, factorise the given polynomial completely.

Q20. Use factor theorem, factorise the given polynomial completely -: $x^3 - 19x - 30$.

Q21. Find the roots of the given equation, correct to (i) two dp. (ii) 3S.f.: $x^2 + 2x + 10 = 0$

Q22. Find the sum and the product of the roots of the given equation: $4x^2 + 5x + 9 = 0$

Q23. The sum of ages of a father and his son is 45 yrs, 5 yrs ago the product of their ages was four times the father's age at the time. find their present ages.

Q24 Given, $P = \{x: -8 < 5x + 2 \leq 17, x \in I\}$ $Q = \{x: -2 \leq 7 + 3x < 17, x \in R\}$, represent

a) $P \cup Q$ (b) $P \cap Q$ on different number lines.

If $A = \{x: -4 < 3x - 2 \leq 13, x \in R\}$ and $B = \{x: -2 \leq 5 + 7x < 40, x \in I\}$. Write down the element of $A \cap B$. Also represent it on the real number line.

Q25 Solve the inequation-:

$$-\frac{2}{3} \leq \frac{3x}{2} - 1 \frac{1}{3} < \frac{5}{6}, x \in W. \text{ Graph the solution set on the real number line.}$$

Q26 a. The sum of three numbers in A.P is 18 and their product is 192. Find the numbers.

b. How many terms of the series $1 + 2 + 4 + 8 + \dots$ must be taken to make 8191?

Q27 Solve the equation-: $1 + 3 + 5 + \dots + x = 10000$

Q28 The sum of three numbers in G.P is 56. If on subtracting 1, 7 and 21 from these shares respectively, the number so formed are in A.P. Determine the numbers.

Q29 The 4th, 7th and last term of a G.P are 10, 80 and 2560 respectively. Find the first term and the number of terms in G.P.

Q30 If 12th term of an A.P is -13 and the sum of the first four terms is 24, find the sum of first 10 terms.

Q31 When $0^\circ < \theta < 90^\circ$, Solve -: $\tan^2 \theta = 3(\sec \theta - 1)$

Do chapter test of chapters 5, 9 and 18 in holiday home work notebook.

ENGLISH

Solve all the questions based on extracts in Act-III, scene-I, II of Merchant of Venice in workbook.

1. Solve all the questions based on extracts of poem no.7 in workbook

PROJECT WORK:-

- a) Write a character sketch of Portia.
- b) Compare and contrast the character of Antonio and Shylock.

Note: - Project work should be done in a file.

COMPUTER APPLICATION

Make a project on *Android Apps* using **POWER POINT PRESENTATION** .

SUBJECT: BIOLOGY

- **Prepare L -1 to 6 for I U.T.**
- Prepare a Lab. Manual and do the following experiments in it.
 - i. To identify and draw labelled diagrams of different stages of Mitosis.
 - ii. To demonstrate the process of diffusion by potassium permanganate crystals.
 - iii. Study of osmosis through a 'thistle funnel' experiment.
 - iv. To demonstrate the process of absorption of water by roots in plants.
 - v. To show that chlorophyll is necessary for photosynthesis.

SUBJECT: CHEMISTRY

- Do observation part from practical work.
- Do the work sheets given in class.
- Do these experiments in Lab.manual.
 - i. To identify the given gas evolved (chlorine).
 - ii. To identify the given gas evolved (hydrogen sulphide).
 - iii. To identify the given gas evolved (hydrochloric acid).
 - iv. To identify the given gas evolved (ammonia).

SUBJECT: PHYSICS

1. Revise all the topics thoroughly which have been taught in the class.
2. Solve additional numericals from other books atleast 50 (in notebook).
3. Prepare Lab. Manual and write the following experiments.
 - i. To determine the value of the unknown weight of the given body.
 - ii. To determine the refractive index of the material of the glass block.
 - iii. To determine the angle of minimum deviation produced by a prism.
 - iv. To find out the focal length of a convex lens by u-v method.
 - v. To verify Ohm's law and hence to find the value of unknown resistance.

Class - 8

हिन्दी परियोजना कार्य

1 - 'जंक - फूड' किसे कहते हैं? यह हमारे स्वास्थ्य के लिए किस प्रकार हानिकारक है? 'संतुलित भोजन' किसे कहते हैं? दैनिक जीवन में इसका उपयोग हमारे स्वास्थ्य के लिए किस प्रकार लाभदायक है? नाश्ता, दोपहर और सायंकाळ के भोजन का सचित्र वर्णन करें।

2 - नैतिकता का जीवन में महत्व, नैतिक व्यक्तियों की भूमिका उदाहरण सहित लिखिए।

3 - 2019 का प्रश्न-पत्र हल कीजिए।

4 - प्रत्येक छात्र को 1-चर्चा बनाना है। विषय अध्यापिका द्वारा निर्धारित किया गया है।