

$$M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$



HOLIDAY HOMEWORK

CLASS: 11TH
MATHEMATICS

SCERT, PUNJAB

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Class 11th-Mathematics

Sets, Relations and Functions, Trigonometric Functions

One Mark Questions

- If A and B are two sets, then $A \cap (A \cup B)$ is equal to:
(a) A (b) B (c) \emptyset (d) $A \cap B$
- The set of girls in a boys school is:
(a) Null set (b) Singleton set (c) finite set (d) None of these
- If A and B are any two sets, then $A - B$ is equal to:
(a) $A \cup B$ (b) $A \cap B'$ (c) $A \cap B$ (d) None of these
- The sets A and B are disjoint of:
(a) $A \cup B = \emptyset$ (b) $A \cap B \neq \emptyset$ (c) $A \cap B = \emptyset$ (d) $A - B = A$
- $A = \{0\}$ is a/an:
(a) empty set (b) infinite set (c) Singleton set (d) subset
- Let $R = \{(1,1), (2,2), (3,3), (1,3), (3,2)\}$ be a relation on the set $A = \{1,2,3\}$. The relation R is:
(a) reflexive only (b) symmetry only (c) transitive only (d) None of these
- The domain of the function $f(x) = \frac{1}{\sqrt{|x|-x}}$ is:
(a) $(-\infty, \infty)$ (b) $(0, \infty)$ (c) $(-\infty, 0)$ (d) $(-\infty, \infty) - \{1\}$
- The greatest value of $\sin x \cos x$ is:
(a) 1 (b) 2 (c) $\sqrt{2}$ (d) $\frac{1}{2}$
- If $\tan \theta = \frac{1}{2}$, and $\tan \phi = \frac{1}{3}$, then the value of $\theta + \phi$ is:
(a) $\frac{\pi}{6}$ (b) π (c) 0 (d) $\frac{\pi}{4}$
- The minimum value of $3\cos x + 4\sin x + 8$ is
(a) 5 (b) 9 (c) 7 (d) 3
- The radian measure of 270° is:
(a) $\frac{\pi}{2}$ (b) π (c) $\frac{3\pi}{4}$ (d) $\frac{3\pi}{2}$
- The value of 765^0 is:
(a) $\frac{1}{2}$ (b) $\frac{1}{\sqrt{2}}$ (c) 1 (d) 0
- $\sin(\frac{\pi}{2} - x)$ is equal to:
(a) $\cos x$ (b) $-\sin x$ (c) $-\cos x$ (d) $\sin x$
- The value of $\sin(\frac{-11\pi}{3})$ is:
(a) $\frac{1}{2}$ (b) $-\frac{1}{2}$ (c) $\frac{\sqrt{3}}{2}$ (d) None of these
- The value of $\tan(\frac{19\pi}{3})$ is:
(a) $\frac{1}{\sqrt{3}}$ (b) 1 (c) $\sqrt{3}$ (d) 0
- The minimum value of $a \sin \theta + b \cos \theta$ is
(a) $\sqrt{a^2 + b^2}$ (b) $\sqrt{a^2 - b^2}$ (c) $-\sqrt{a^2 + b^2}$ (d) None of these

17. $\cos\left(\frac{\pi}{2} + x\right)$ is equal to:

- (a) $\sin x$ (b) $-\cos x$ (c) $-\sin x$ (d) none of these

18. The maximum value of $\sin x + \cos x$ is:

- (a) 1 (b) 2 (c) $\sqrt{2}$ (d) $\frac{1}{\sqrt{2}}$

19. $\sin 2A =$

- (a) $2 \sin A \cos A$ (b) $\frac{2 \tan A}{1 - \tan^2 A}$ (c) $\cos^2 A - \sin^2 A$ (d) $2 \cos^2 A - 1$

20. $\cos 2A =$

- (a) $\cos^2 A - \sin^2 A$ (b) $2 \cos^2 A - 1$ (c) $\frac{1 - \tan^2 A}{1 + \tan^2 A}$ (d) All of the above

Fill ups

1. $\sin\left(\frac{\pi}{6}\right) = \dots\dots\dots$
2. $\sin\left(\frac{3\pi}{2}\right) = \dots\dots\dots$
3. $\sin(360^\circ - \theta) = \dots\dots\dots$
4. $\cos\left(\frac{3\pi}{2} + \theta\right) = \dots\dots\dots$
5. $\sin(\pi + \theta) = \dots\dots\dots$
6. $\tan\left(\frac{5\pi}{2} - \theta\right) = \dots\dots\dots$
7. $\tan(3\pi + \theta) = \dots\dots\dots$
8. $\sin(150^\circ) = \dots\dots\dots$
9. $\tan(210^\circ) = \dots\dots\dots$
10. $\cot(240^\circ) = \dots\dots\dots$
11. $\sec^2 A - \tan^2 A = \dots\dots\dots$
12. $\sin 2A = \dots\dots\dots$
13. If A and B are disjoint sets then, $A \cap B = \dots\dots\dots$
14. $A \cup A = \dots\dots\dots$
15. $A \cap A = \dots\dots\dots$
16. $(A - B) \cup (A \cap B) \cup (B - A) = \dots\dots\dots$
17. $A \cap A' = \dots\dots\dots$
18. $A \cup A' = \dots\dots\dots$

4 marks questions/ 6 marks questions

1. If for any sets $P(A) = P(B)$, then prove that $A = B$.
2. If $f(x) = x^2$, then find $\frac{f(1.1) - f(1)}{1.1 - 1}$
3. Find the domain and range of the following real functions:
(i) $f(x) = -|x|$ (ii) $f(x) = \sqrt{9 - x^2}$

4. Find the range of the function $f(x) = \frac{|x-4|}{x-4}$

5. Find the domain of the function:

(i) $f(x) = \frac{1}{\sqrt{1-\cos x}}$

(ii) $f(x) = \frac{x^2-x+3}{x^2-1}$

6. If $\cos x = -\frac{1}{2}$, x lies in the third quadrant then find the other trigonometric ratios.

7. Prove that $\tan(4x) = \frac{4 \tan x (1-\tan^2 x)}{1-6 \tan^2 x + \tan^4 x}$

8. Prove that $\frac{(\sin 7x + \sin 5x) + (\sin 9x + \sin 3x)}{(\cos 7x + \cos 5x) + (\cos 9x + \cos 3x)} = \tan 6x$

9. Find $\sin\left(\frac{x}{2}\right)$, $\cos\left(\frac{x}{2}\right)$ and $\tan\left(\frac{x}{2}\right)$

If (i) $\tan x = -\frac{4}{3}$, x in quadrant II

(ii) $\cos x = -\frac{1}{3}$, x in quadrant III

(iii) $\sin x = \frac{1}{4}$, x in quadrant II

10. Find the value of the expressions

$$\cos^4\left(\frac{\pi}{8}\right) + \cos^4\left(\frac{3\pi}{8}\right) + \cos^4\left(\frac{5\pi}{8}\right) + \cos^4\left(\frac{7\pi}{8}\right)$$

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PERSONALIZED PRACTICE PROGRAM FOR MATHS BY KHAN ACADEMY**

Class	Link
Class 11	https://bit.ly/Class11_KA_SummerRevisionPacket_AY-24-25

1. **Teachers** are requested to **provide the login id credentials to students** before they start practicing.

2. **Students** are requested to **log in to Khan Academy** before using these links.

3. Links will be updated by 26th May, 24