O.P. JINDAL SCHOOL, SAVITRI NAGAR

Periodic Test-3 (Round 1) 2025-2026

Class: X **MM:20**

Subject: Mathematics **Time :1Hour**

General Instructions:

i) All questions are compulsory.
ii) Question no. 1 to 8 carries 1 mark each, question no. 9 to 11 carries 2 marks each, question no. 12 and 13 carries 3 marks each.
iii) There is no overall choice. However, internal choice has been provided.

SECTION A

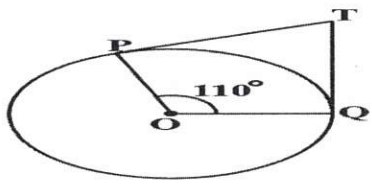
1.) Given that $\sin\theta = \frac{a}{b}$, then $\cos\theta$ is equal to

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

2.) Given that $\sin\alpha = \frac{1}{2}$ and $\cos\alpha = \frac{1}{2}$, then the value of $(\alpha + \beta)$ is

a) 0^0 b) 30^0 c) 60^0 d) 90^0

3.) In the below figure, if TP and TQ are the two tangents to a circle with centre O so that $\angle$ POQ = 110°, then find $\angle$ PTQ.



a) 90^0 b) 110^0 c) 70^0 d) 55^0

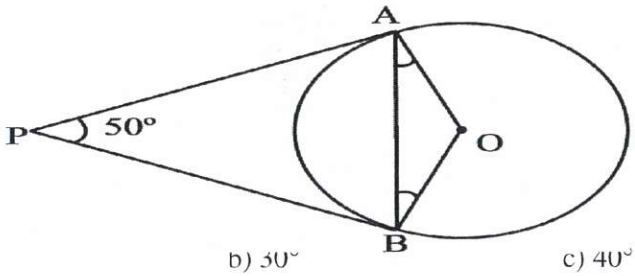
4.) If triangle ABC is right angled at C, then the value of sec (A+B) is

a) 0 b) 1 c) $\frac{2}{\sqrt{3}}$ d) not defined

5.) The value of x, if $\tan 3x = \sin 45^0 \cos 45^0 + \sin 30^0$ is

a) 30^0 b) 45^0 c) 15^0 d) none of these

6.) In below figure, if PA and PB are tangents to the circle with centre O such that $\angle$APB = 50°, then $\angle$OAB is equal to



a) 25° b) 30° c) 40° d) 50°

7.) . If two circles touch internally, then the number of their common tangents is

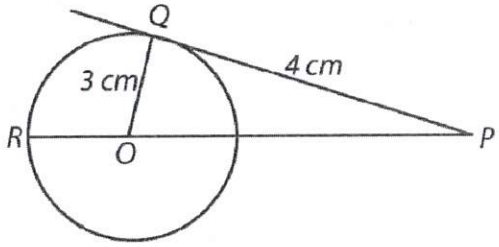
a) 2 b) 1 c) 4 d) 3

8 The length of the tangent from a point at a distance of 13 cm from the centre of the circle of radius 5 cm is

a) 8 cm b) 12 cm c) $\sqrt{194}$ d) 1

SECTION B

9.) In the given figure, find the length of PR.



10.) Prove that $\frac{\sin x}{1+\cos x}+\frac{1+\cos x}{\sin x}=2\cos ecx.$

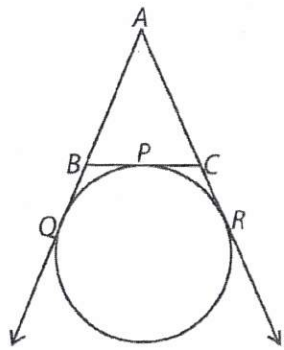
OR

Prove that $\sec^4 x - \sec^2 x = \tan^4 x + \tan^2 x$.

11.) Find the value of $2(\cos^2 45^0 + \tan^2 60^0) - 6(\sin^2 45^0 - \tan^2 30^0)$.

SECTION C

12.) In the given figure, a circle touches the side BC at P and touches AB & AC produced at Q & R respectively. If AQ = 7 cm, find the perimeter of Δ ABC



OR

If a circle touches all the four sides of a quadrilateral PQRS, prove that PQ + RS = PS + RQ .

13.) The angle of elevation of a tower at a point is 45°. After going 20 meters towards the foot of the tower the angle of elevation of the tower becomes 60°. Calculate the height of the tower.

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