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**Govt. Ghazali Degree College, Jhang**

(Important Short Questions)

Course: Algebra and Trigonometry

Chapter # 09

Fundamentals of Trigonometry

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Following short questions are selected from previous 5 years papers of different boards. Solve these at your own to perform well in annual exams.

1. Define a radian.
2. Convert  $\frac{25}{36}\pi$  radian into the measure of sexagesimal system.
3. Convert  $120'40''$  into the radian measure.
4. Find  $r$ , when  $l = 56\text{cm}$  and  $\theta = 45^\circ$ .
5. Find  $l$ , when  $\theta = 65^\circ 20'$  and  $r = 18\text{mm}$ .
6. Verify  $\sin 2\theta = 2\sin\theta\cos\theta$  for  $\theta = 45^\circ$ .
7. If  $\sin\theta = -\frac{1}{\sqrt{2}}$ , then find the value of  $\cos\theta$  if  $\theta$  does not lie in third quadrant.
8. Find  $x$ , if  $\tan^2 45^\circ - \cos^2 60^\circ = x\sin 45^\circ \cos 45^\circ \tan 60^\circ$ .
9. Prove that  $\operatorname{cosec}\theta + \tan\theta\sec\theta = \operatorname{cosec}\theta\sec^2\theta$ .
10. Prove that  $\cos^2\theta - \sin^2\theta = \frac{1-\tan^2\theta}{1+\tan^2\theta}$ , where  $\theta$  is not an integral multiple of  $\frac{\pi}{2}$ .
11. Prove that  $\sec^2\theta - \operatorname{cosec}^2\theta = \tan^2\theta - \cot^2\theta$ .
12. Prove that  $\frac{1-\sin\theta}{\cos\theta} = \frac{\cos\theta}{1+\sin\theta}$ .
13. Prove that  $\cos^4\theta - \sin^4\theta = \cos^2\theta - \sin^2\theta$ .
14. Prove that  $(\sec\theta - \tan\theta)^2 = \frac{1-\sin\theta}{1+\sin\theta}$ .
15. Prove that  $\sin^2\frac{\pi}{6} + \sin^2\frac{\pi}{3} + \tan^2\frac{\pi}{4} = 2$ .
16. Prove that  $2\cos^2\theta - 1 = 1 - 2\sin^2\theta$ .

Best of Luck