The Indian School, Kingdom of Bahrain

Class : XI **Mathematics Assignment** **Date of Submission:** 02. 05. 2011

---

1. If tanx = k tan y ; prove that sin (x – y) $= \frac{k-1}{k+1}\sin(x+y)$

2. Show that $\cos 20^0 \cos 40^0 \cos 60^0 \cos 80^0 = \frac{1}{16}$

3. Prove that tan8x – tan7x – tanx = tan8x tan7x tanx

4. Prove that $\cos^2 x + \cos^2(x + 120°) + \cos^2 (x – 120°) = \frac{3}{2}$

5. Prove that $\sqrt{2+\sqrt{2+2\cos 4x}} = 2\cos x$

6. Prove that $\frac{\sin x \sin 2x + \sin 3x \sin 6x}{\sin x \cos 2x + \sin 3x \cos 6x} = \tan 5x$

7. Evaluate: $\frac{\cos(2\pi+\theta)\cos ec(2\pi+\theta)\tan(\frac{\pi}{2}+\theta)}{\sec(\frac{\pi}{2}+\theta)\cos(2\pi-\theta)\cot(\pi+\theta)}$

8. Find the value of $\sin\frac{x}{2}$, $\cos\frac{x}{2}$ *and* $\tan\frac{x}{2}$ *if* $\tan x = \frac{-3}{4}$, *x is in quadrant IV*

9. Prove that $\frac{\cos 11^0 + \sin 11^0}{\cos 11^0 - \sin 11^0} = \tan 56^0$

10. Verify that $\frac{\sin x + \sin 3x + \sin 5x}{\cos x + \cos 3x + \cos 5x} = \tan 3x$

11. Prove that $\frac{\sin 5x + \sin 7x + \sin 9x + \sin 11x}{\cos 5x + \cos 7x + \cos 9x + \cos 11x} = \tan 8x$

12. If sin x = $\frac{3}{5}$ and cos y = $\frac{-12}{13}$, 0 < x < π/2 and π/2 < y < π , then find sin(x – y).

13. If tan $(\alpha+\theta) = n\tan(\alpha-\theta)$, *Show that* (n +1)sin 2θ =(n -1) sin 2α

14. Find the value of $\tan\frac{\pi}{8}$

15. Solve the following trigonometric equations:

i) $2\cos^2 x + 3\sin x = 0$ ii) sin x + sin2x + sin3x = 0