Evaluate the following:

1. $\dfrac{\cot 54^0}{\tan 36^0} + \dfrac{\tan 20^0}{\cot 70^0} - 2$

2. Sec 50^0 Sin 40^0 + Cos 40^0 Cosec 50^0

3. $\dfrac{\cos 80^0}{\sin 10^0} + \cos 59^0 \, \cos ecc31^0$

4. $2\dfrac{\cos 67^0}{\sin 23^0} - \dfrac{\tan 40^0}{\cot 50^0} - \sin 90^0$

5. $2\dfrac{\sin 43^0}{\cos 47^0} - \dfrac{\cot 30^0}{\tan 60^0} - \sqrt{2}\sin 45^0$

6. $\sin(50^0 + \theta) - \cos(40^0 - \theta)$

7. $\dfrac{\cot 40^0}{\tan 50^0} - \dfrac{1}{2}\left(\dfrac{\cos 35^0}{\sin 55^0}\right)$

8. $\dfrac{\cos 75^0}{\sin 15^0} + \dfrac{\sin 12^0}{\cos 78^0} - \dfrac{\cos 18^0}{\sin 72^0}$

9. $\dfrac{\cos 35^0}{\sin 55^0} + \dfrac{\sin 11^0}{\cos 79^0} - \cos 28^0 \cos ec62^0$

10. tan 35^0 tan 40^0 tan 45^0 tan 50^0 tan 55^0

11. tan 7^0 tan 23^0 tan 60^0 tan 67^0 tan 83^0

12. tan 5^0 tan 25^0 tan 30^0 tan 65^0 tan 85^0

13. $cosec(65^0 + \theta) - sec(25^0 - \theta) - tan(55^0 - \theta) + cot(35^0 + \theta)$

14. $\dfrac{\tan 50^0 + \sec 50^0}{\cot 40^0 + cosec 40^0} + \cos 40^0\, cosec 50^0$

15. $\dfrac{\cos^2 20^0 + \cos^2 70^0}{\sin^2 59^0 + \sin^2 31^0}$

16. $\dfrac{\cos^2 20^0 + \cos^2 70^0}{\sin^2 20^0 + \sin^2 70^{0^0}} + \sin^2 64^0 + \cos 64^0 \sin 26^0$

17. $\dfrac{\sin 220^0 + \sin^2 70^0}{\cos^2 20 + \cos^2 70^0} + \left(\dfrac{\sin(90^0 - \theta)\sin \theta}{\tan \theta} + \dfrac{\cos(90^0 - \theta)\cos \theta}{\cot \theta} \right)$

18. $\dfrac{\sec(90^0 - \theta)\, cosec\, \theta - \tan(90^0 - \theta)\cot \theta + (\cos^2 35^0 + \cos^2 55^0)}{\tan 5^0 \tan 15^0 \tan 45^0 \tan 75^0 \tan 85^0}$

19. Express sin 81^0 + tan 71^0 in terms of trigonometric ratios of angles between 0^0 and 45^0.

20. Express cos 75^0 + cot 75^0 in terms of trigonometric ratios of angles between 0^0 and 45^0.

21. If $\tan 2\theta = \cot(\theta + 6^0)$, where $2\theta \ and \ \theta + 6$ are acute angles, find the value of θ.

22. If A and B are acute angles and sin A = cos B, Prove that A + B = 90^0.

23. If A, B, C are the interior angles of a triangle ABC, show that show

that $\sin\dfrac{B+C}{2} = \cos\dfrac{A}{2}$

24. $\dfrac{\cos(90^0 - \theta)}{\sin\theta} + \dfrac{\sin\theta}{\cos(90^0 - \theta)} = 2, \theta \neq 0^0$

25. $\cos(81^0 + \theta) = \sin(9^0 - \theta)$

26. $\sin(90^0 - \theta).\cos(90^0 - \theta) = \dfrac{\tan\theta}{1 + \tan^2\theta}$ **Answers**

1. 0	2. 2	3. 2	4. 0
5. 0	6. 0	7. 1/2	8. 1
9. 1	10. 1	11. $\sqrt{3}$	12. $\dfrac{1}{\sqrt{3}}$
13. 0	14. 2	15. 1	16. 2
17. 2	18. 2	19. cos 9^0 + cot 19^0	20. sin 15 ^{0} + tan 15 ^{0}
21. 28^0			