

1. $\sin x = \frac{\pi}{3}.$

2. $\cos x = \sqrt{3}.$

3. $\sqrt{2} \cos^2 7x = \cos 7x.$

4. $(2 \sin x - \cos x)(1 + \cos x) = \sin^2 x.$

5. $(\arccos x)^2 - 6(\arccos x) + 8 = 0.$

6. $2 \cos 2x + \cos x = 1.$

7. $\cos x(2 \cos^2 x - 1) = \frac{1}{4}.$

8. $\sqrt{3} \sin x - \operatorname{tg} x + \operatorname{tg} x \cdot \sin x = \sqrt{3}.$

9. $4 \sin 2x \cos 2x - 3 \sin^2 2x = 1.$

10. $4 \sin^4 x + 12 \cos^2 x = 7.$

11. $2 \sin^3 x - \sin^2 x \cos x + 2 \sin x \cos^2 x - \cos^3 x = 0.$ **12.** $3 \cos\left(\frac{\pi}{2} - x\right) = 2 \cos^2 x.$

13. $\sin x + \sin^2 x + \sin^3 x = \cos x + \cos^2 x + \cos^3 x.$

14. $3 \operatorname{tg}^2 x + 7 = \frac{2}{\sin^2 x}.$

15. $2 \sin x \cos x - 6(\sin x - \cos x) + 6 = 0.$

16. $\sin 3x + \sin x = \sin 2x$

17. $\sin 2x - \operatorname{tg} \frac{\pi}{10} \cos 2x = 1.$

18. $1 - \sin 2x = \cos x - \sin x.$

19. $(3 - \operatorname{ctg}^2 x) \sin 2x = 2(1 + \cos 2x).$

20. $(\sin 2x + \sqrt{3} \cos 2x)^2 = 5 + \cos\left(\frac{\pi}{2} - 2x\right).$

21. $\operatorname{tg} 2x = 4 \cos^2 x - \operatorname{ctg} x.$

22. $3 \cos^2 x - \sin^2 x - 2 \sin x \cos x = 0.$

23. $\operatorname{tg}\left(\frac{\pi}{2} \cos x\right) = \operatorname{ctg}(\pi \sin x).$

24. $\cos x + \sin x + 2 \sin x \cdot \cos x = 1.$

25. $2 \sin^2 x + \sin(x^2) = 1.$

26. $\cos 3x + \sin(9x + 2) = 0$

27. $\operatorname{tg} x = (2 + \sqrt{3}) \operatorname{tg} \frac{x}{3}.$

28. $\operatorname{tg} 3x = \operatorname{tg} x$

29. $\operatorname{tg} 2x \operatorname{tg} 7x = 1.$

30. $4 \cos x + 3 \sin x = 5.$

31. $\sqrt{\cos 3x + \sqrt{3} \sin 3x - 3 \cos^2 x + \cos x + \frac{13}{4}} = \sqrt{3} \sin x + \frac{1}{2}.$

32. $2 \cos 3x = \sqrt{3} \cos x - \sin x.$

33. $\sqrt{\operatorname{tg} x + \sin x} + \sqrt{\operatorname{tg} x - \sin x} = 2\sqrt{\operatorname{tg} x} \cos x.$

34. $\operatorname{tg}(\pi \cdot \operatorname{tg} x) = \operatorname{ctg}(\pi \cdot \operatorname{ctg} x).$

35. $2 \cos x + \sqrt{2} \sin 28x = 3\sqrt{2} + 2 \cos 28x \cdot \sin x.$