Pre-Calculus Honors Solving Trig Equations Supplement to chapter 5

***Verify that the x-values are solutions of the equation.***

1. $2cosx-1=0 A. x=\frac{π}{3} B. x=\frac{5π}{3} $ 2. $cscx-2=0 A. x=\frac{π}{6} B. x=\frac{5π}{6}$

3. $3tan^{2}\left(2x\right)-1=0 A. x=\frac{π}{12} B. x=\frac{5π}{12}$ 4. $4cos^{2}\left(2x\right)-2=0 A. x=\frac{π}{8} B. x=\frac{7π}{8}$

5. $2cos^{2}x+3cosx+1=0 A. x=\frac{4π}{3} B. x=π$ 6. $sec^{4}x-3sec^{2}x-4=0 A. x=\frac{2π}{3} B. x=\frac{5π}{3}$

***Solve the equation for*** $x\in [0,2π)$***.***

7. $2cosx+1=0 $ 8. $\sqrt{2}sinx+1=0 $ 9. $\sqrt{3}secx-2=0 $ 10. $cotx+1=0 $

11. $3csc^{2}x-4=0 $ 12. $csc^{2}x-2=0 $ 13. $2sin^{2}(2x)=1 $ 14. $tan^{2}\left(3x\right)=3 $

15. $4cos^{2}x-3=0 $ 16. $cosx(cosx-1)=0 $ 17. $sin^{2}x=3cos^{2}x $

18. $(tan⁡(3x))\left(tanx-1\right)=0$ 19. $(3tan^{2}x-1)\left(tan^{2}x-3\right)=0$ 20. $cos⁡(2x)\left(2cosx+1\right)=0$

***Find all solutions of the equation algebraically.***

21. $cos^{3}x=cosx$ 22. $tan^{2}x-1=0 $ 23. $3tan^{3}x=tanx $ 24. $2sin^{2}x=2+cosx $

25. $sec^{2}x-secx=2$ 26. $secxcscx=2cscx $ 27. $2sinx+cscx=0 $ 28. $sin2x=- \frac{\sqrt{3}}{2} $

29. $cscx+cotx=1$ 30. $tan⁡(3x)=0 $ 31. $cos\frac{x}{2}=\frac{\sqrt{2}}{2} $ 32. $sec⁡(4x)=2 $

33. $\frac{1+cosx}{1-cosx}=0$ 34. $2sin^{2}x+3sinx+1=0 $ 35. $2sec^{2}x+tan^{2}x-3=0$

36. $cosx+sinxtanx=2 $ 37. $sec^{2}x+tanx=3$ 38. $csc^{2}x-4cotx=-2$

***Answers***

7. $\frac{2π}{3} , \frac{4π}{3} $ 8. $\frac{5π}{4} , \frac{7π}{4}$ 9. $\frac{π}{6} , \frac{11π}{6}$ 10. $\frac{3π}{4} , \frac{7π}{4}$ 11. $\frac{π}{3} , \frac{2π}{3}, \frac{4π}{3} , \frac{5π}{3}$ 12. $\frac{π}{4} , \frac{3π}{4}, \frac{5π}{4} , \frac{7π}{4} $

13. $\frac{π}{8} , \frac{3π}{8}, \frac{5π}{8} , \frac{7π}{8}, \frac{9π}{8} , \frac{11π}{8}, \frac{13π}{8} , \frac{15π}{8}$ 14. $\frac{π}{9} , \frac{2π}{9}, \frac{4π}{9} , \frac{5π}{9}, \frac{7π}{9} , \frac{8π}{9}, \frac{10π}{9} , \frac{11π}{9} , \frac{13π}{9} , \frac{14π}{9}, \frac{16π}{9} , \frac{17π}{9}$

15. $\frac{π}{6} , \frac{5π}{6}, \frac{7π}{6} , \frac{11π}{6}$ 16. $0 , \frac{π}{2}, \frac{3π}{2}$ 17. $\frac{π}{3},\frac{2π}{3},\frac{4π}{3},\frac{5π}{3}$ 18. $\frac{π}{3},\frac{2π}{3},\frac{4π}{3},\frac{5π}{3}, \frac{π}{4} , \frac{5π}{4}$

19. $\frac{π}{6} , \frac{π}{3}, \frac{2π}{3} , \frac{5π}{6}, \frac{7π}{6} , \frac{4π}{3}, \frac{5π}{3} , \frac{11π}{6}$ 20. $\frac{π}{4} , \frac{3π}{4}, \frac{5π}{4} , \frac{7π}{4},\frac{π}{3},\frac{4π}{3} $ 21. $\frac{π}{2}+πn , πn $ 22. $\frac{π}{4}+πn , \frac{3π}{4}+πn $

23. $πn , \frac{π}{6}+πn, \frac{5π}{6}+πn$ 24.$ \frac{π}{2}+πn , \frac{2π}{3}+2πn , \frac{4π}{3}+2πn $ 25. $\frac{π}{3}+2πn , \frac{5π}{3}+2πn , π+2πn $

26. $\frac{π}{3}+πn , \frac{5π}{3}+πn$ 27. No solution 28. $\frac{7π}{12}+πn , \frac{11π}{12}+πn$ 29. $\frac{π}{2}+2πn$ 30. $\frac{πn}{3}$

31. $\frac{π}{2}+4πn , \frac{7π}{2}+4πn $ 32.$ \frac{π}{12}+\frac{πn}{ 2} , \frac{5π}{12}+\frac{πn}{ 2} $ 33. $πn$ 34. $\frac{7π}{6}+2πn, \frac{11π}{6}+2πn, \frac{3π}{2}+2πn $

35. $\frac{π}{6}+πn, \frac{5π}{6}+πn$ 36. $\frac{π}{3}+2πn , \frac{5π}{3}+2πn$ 37. $\frac{π}{4}+πn , \arctan(\left(-2\right))+πn$ 38. $\frac{π}{4}+πn , \arctan(\left(\frac{1}{3}\right))+πn$