

Pre-Calculus

Solving Equations Requiring Substitution or Rewriting

Find all solutions of each equation over the interval $[0, 2\pi)$

1. $\cos^3 \theta = \cos \theta$

2. $\sec^2 \beta - 1 = 0$

3. $3 \tan^3 \theta = \tan \theta$

4. $2 \sin^2 \theta = 2 + \cos \theta$

5. $\sec^2 \alpha - \sec \alpha = 2$

6. $\sec \alpha \csc \alpha = 2 \csc \alpha$

7. $2 \sin \alpha - \csc \alpha = 0$

8. $\sec \theta + \tan \theta = 1$

9. $2 \cos^2 \beta + \cos \beta - 1 = 0$

10. $2 \sin^2 x + 3 \sin x + 1 = 0$

11. $2 \sec^2 \alpha + \tan^2 \alpha - 3 = 0$

12. $\cos \beta + \sin \beta \tan \beta = 2$

13. $\csc^2 \beta + \cot \beta = 3$

14. $\csc^2 \theta - 4 \cot \theta = -2$

15. $9 \sec^2 \beta + 2 = 14$

16. $\sin \beta = \cos \beta - 1$

17. $\cos^2 \beta = 4(\sin^4 \beta - 1)$

18. $\cot^2 \alpha = \csc \alpha + 1$

19. $4 \sin^3 \theta + 2 \sin^2 \theta = 2 \sin \theta + 1$

20. $\frac{1 + \sin \alpha}{\cos \alpha} + \frac{\cos \alpha}{1 + \sin \alpha} = 4$