Algebra 2 S2 Name: _____ Block: _____

Solving Trig Equations

Solve the trig equations. Complete 10 questions and do the rest for practice. (Watch the video regarding Solving Trig Equations)

1. $2\sin\theta = \sqrt{3}$

   $\sin\theta = \frac{\sqrt{3}}{2}$ $60°, 120°$

2. $2\sin\theta = \sqrt{2}$

   $\sin\theta = \frac{\sqrt{2}}{2}$ $45°, 135°$

3. $2\sin\theta - \sqrt{2} = 0$

   $\sin\theta = \frac{\sqrt{2}}{2}$ $45°, 135°$

4. $2\cos\theta - \sqrt{2} = 0$

   $\cos\theta = \frac{\sqrt{2}}{2}$ $45°, 315°$

5. $2\cos\theta + 1 = 0$

   $\cos\theta = \frac{1}{2}$ $60°, 300°$

6. $2\sin\theta - \sqrt{3} = 0$

   $\sin\theta = \frac{\sqrt{3}}{2}$ $60°, 120°$

7. $2\sin\theta - 1 = 0$

   $\sin\theta = \frac{1}{2}$ $30°, 150°$

8. $5\tan\theta - 5 = 0$

   $\tan\theta = \frac{5}{5} \rightarrow \tan\theta = 1$ $45°, 225°$

9. $\cos\theta + 1 = 0$

   $\cos\theta = -1$ $180°$

10. $2\cos\theta - \sqrt{3} = 0$

    $\cos\theta = \frac{\sqrt{3}}{2}$ $30°, 330°$

11. $\cos\theta(\tan\theta - \sqrt{3}) = 0$

    cos tan

    $\cos\theta = 0$, $\tan\theta = \sqrt{3}$ $90°, 270°; 60°, 240°$

12. $2\sin\theta + \sqrt{3} = 0$

    $\sin\theta = \frac{-\sqrt{3}}{2}$ $240°, 300°$

13. $\sqrt{2}\sin\theta = 1$

    $\sin\theta = \frac{1}{\sqrt{2}} \rightarrow \sin\theta = \frac{\sqrt{2}}{2}$ $45°, 135°$

14. $\sin\theta - 2\sin\theta\cos\theta = 0$

    sin cos

    $\sin\theta = 0$, $\cos\theta = \frac{1}{2}$ $0°, 180°, 60°, 300°$

15. $\sin\theta = \cos\theta$

    $45°, 225°$

16. $2\cos\theta + 4 = 5$

    $\cos\theta = \frac{1}{2}$ $60°, 300°$

17. $2\sin\theta + 4 = 5$

    $\sin\theta = \frac{1}{2}$ $30°, 150°$

18. $5\cos\theta - \sqrt{3} = \cos\theta$

    no solution

19. $3\tan\theta - \sqrt{3} = 0$

    $\tan\theta = \frac{\sqrt{3}}{3}$ $30°, 210°$

20. $\sqrt{3}\tan\theta - \sqrt{3} = 0$

    $\tan\theta = 1$ $45°, 225°$

Algebra 2 S2 Name: _____ Block: _____

Solve the trig equations. Complete 10 questions and do the rest for practice. (Watch the video regarding Solving Trig Equations using U-Substitution)

21. $2sin^2\theta - 1 = 0$

$\sin\theta = \pm\frac{\sqrt{2}}{2}$ $45°, 135°, 225°, 315°$

22. $3tan^2\theta - 1 = 0$

$\tan\theta = \pm\frac{\sqrt{3}}{3}$ $30°, 210°, 150°, 330°$

23. $2sin^2\theta - 3sin\theta + 1 = 0$

$\sin\theta = 1, \sin\theta = \frac{1}{2}$ $90°, 30°, 150°$

24. $2sin\theta cos\theta - sin\theta = 0$

$\sin\theta = 0, \cos\theta = \frac{1}{2}$ $0°, 180°, 60°, 300°$

25. $sin^2\theta + sin\theta = 0$

$\sin\theta = 0, \sin\theta = -1$ $0°, 180°, 270°$

26. $2cos^2\theta - cos\theta - 1 = 0$

$\cos\theta = 1, \cos\theta = -\frac{1}{2}$ $0°, 120°, 240°$

27. $2cos^4\theta - 3cos^2\theta + 1 = 0$

$\cos\theta = \pm\frac{\sqrt{2}}{2}, \cos\theta = \pm 1$ $45°, 135°, 225°, 315°, 0°, 180°,$

28. $2sin^2\theta - 1 = 0$

$\sin\theta = \frac{\sqrt{2}}{2}$ $45°, 135°, 225°, 315°$

29. $sin^2\theta = 0$

$\sin\theta = 0$ $0°, 180°$

30. $2cos^2\theta - cos\theta = 0$

$\cos\theta = 0, \cos\theta = \frac{1}{2}$ $90°, 270°, 60°, 300°$

31. $4sin^4\theta + 3sin^2\theta - 1 = 0$

$x^2 = -1$ $\sin\theta = \pm\frac{1}{2}$ $30°, 150°, 210°, 330°$

32. $4cos^4\theta - 3 = 0$

$\cos\theta = \sqrt[4]{\frac{3}{4}}$

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

$\cos\theta = 0$ $90°, 270°, 0°, 180°$
$\cos\theta = \pm 1$

34. $tan^4\theta - 3 = 0$

$\tan\theta = \sqrt[4]{3}$

35. $4sin^2\theta - 2 = 0$

$\sin\theta = \pm\frac{\sqrt{2}}{2}$ $45°, 135°, 225°, 315°$

36. $16cos^2\theta - 8 = 0$

$\cos\theta = \pm\frac{\sqrt{2}}{2}$ $45°, 315°, 225°, 135°$

37. $2cos^2\theta - 3cos\theta + 1 = 0$

$\cos\theta = 1$ $0°, 60°, 300°$
$\cos\theta = \frac{1}{2}$