

5.3 Solving Trig Equations Practice Worksheet #1

Pre-calculus

Name: _____

Date: _____ Block: _____

Solve for the unknown variable on the interval $0 \leq x < 2\pi$.

1. $4 \cos^2 x - 3 = 0$

2. $\sqrt{2} \sin 2x = 1$

3. $3 \cot^2 x - 1 = 0$

4. $\cos^3 x = \cos x$

5. $\sin x - 2 \sin x \cos x = 0$

6. $2 \sin^2 x - \sin x - 3 = 0$

7. $\csc^2 x - \csc x - 2 = 0$

8. $\cos^2 x = 1 - \sin x$

Solve for the unknown variable on the given interval.

9. $\sqrt{3} + \tan(2x) = 0$ on $[0, 2\pi)$.

10. $\cos(\pi x) = 0.5$ on $[0, 2)$.

11. $\sin\left(\frac{x}{2}\right) - 1 = 0$ on $[0, 8\pi)$.

5.3 Solving Trig Equations – Worksheet #2

Pre-calculus

Name: _____

Date: _____ Block: _____

Part 1: Solve for the unknown variable. Give all of the exact general solutions.

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

2. $\cos \theta = \sin \theta$

3. $\tan \theta = 1$

4. $1 + \sin \theta = 2 \cos^2 \theta$

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

6. $\sin 3\theta = -1$

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

8. $\cos 2\theta = \frac{1}{2}$

9. $2 \sin^2 \theta - \sin \theta - 1 = 0$

10. $\tan 4\theta = -1$

11. $\tan^2 3x = 3$

12. $\cos \frac{x}{2} = \frac{\sqrt{2}}{2}$

Part 2: Solve by approximating the solutions on the interval $[0, 2\pi)$.

13. $2 \sin^2 x + 3 \sin x + 1 = 0$

14. $4 \sin^2 x = 2 \cos x + 1$

15. $\csc x + \cot x = 1$

16. $\frac{\cos x \cot x}{1 - \sin x} = 3$

17. $\sec^2 x + 0.5 \tan x = 1$

Part 3: Use the calculator's inverse trig functions to approximate the solutions. Remember that you must also find the other solution by either adding π , subtracting the value from π , or subtracting the value from 2π .

18. $\tan \theta = 4$

19. $\cos \theta = 0.84$

20. $\sin \theta = 0.63$