

Matched Problems Worksheet Trigonometry, Section 6.3 Trigonometric Equations Involving Multiple Angles Name _____

Date _____

DIRECTIONS Work each of the problems below, showing your work neatly and clearly. Each problem is similar to the example with the same number in your eBook. If you are stuck on a problem, you can read through the corresponding example in your eBook, and you can watch one of the videos that accompany that example. Also, you can use the QR code at the right to view the videos for this section on your smart phone or tablet.



1. Solve for
$$\theta$$
 if $0^\circ \le \theta < 360^\circ$: $\sin 3\theta = \frac{\sqrt{3}}{2}$

2. Find all solutions to $\tan 2x = -1$, if x is measured in radians with exact values.

3. Solve for x if $0 \le x < 2\pi$: $\cos 2x \cos x - \sin 2x \sin x = \frac{1}{2}$ 4. Solve for θ if $0^\circ \le \theta < 360^\circ$: $4\sin^2 2\theta - 3 = 0$

- 5. Find all solutions to $\tan^2 2x = 3$, if x is measured in radians with exact values.
- 6. Solve for θ if $0^{\circ} \le \theta < 360^{\circ}$: $\cos^2 2\theta - \sin^2 2\theta = -1$



3. Solve for x if $0 \le x < 2\pi$:

ANSWERS:

1. Solve for θ if $0^\circ \le \theta < 360^\circ$: $\sin 3\theta = \frac{\sqrt{3}}{2}$

20°,40°,140°,160°,260°,280°

 $\cos 2x \cos x - \sin 2x \sin x = \frac{1}{2}$

 $\frac{\pi}{9}, \frac{5\pi}{9}, \frac{7\pi}{9}, \frac{11\pi}{9}, \frac{13\pi}{9}, \frac{17\pi}{9}$

2. Find all solutions to $\tan 2x = -1$, if x is measured in radians with exact values.

 $\frac{3\pi}{8} + \frac{k\pi}{2}$

4. Solve for θ if $0^{\circ} \le \theta < 360^{\circ}$: $4\sin^2 2\theta - 3 = 0$

30°, 60°, 120°, 150°, 210°, 240°, 300°, 330°

- 5. Find all solutions to $\tan^2 2x = 3$, if x is measured in radians with exact values.
 - $\frac{\pi}{6} + \frac{k\pi}{2}, \frac{\pi}{3} + \frac{k\pi}{2}$

6. Solve for θ if $0^\circ \le \theta < 360^\circ$: $\cos^2 2\theta - \sin^2 2\theta = -1$

45°,135°,225°,315°

