

Trigonometric Equations

Name _____

Class _____

Date _____

A N S W E R S

1a

1b

2a

2b

3a

3b

4a

4b

5a

5b

6a

6b

Solve the following trigonometric equations:

1. a. $\sin x \tan x = \cos x + \tan x$

b. $\left(\frac{1}{\sin x} + \cot x\right) \cot x = 1$

2. a. $\sin^2 x - 3 \sin x \cos x + 2 \cos^2 x = 0$

b. $12 \cos^2 x - 4 \sin x \cos x - \sin^2 x = 0$

3. a. $\sin x + \sin 3x = 4 \cos^2 x$

b. $\cos x - \cos 3x = 4 \sin^2 x$

4. a. $\cos^2(\pi + x) + \frac{\sqrt{3}}{2} \sin 2x = 0$

b. $2\sqrt{3} \sin^2 x + \cos\left(\frac{3\pi}{2} - 2x\right) = 0$

5. Solve the following equations in the interval $[0, 2\pi]$:

a. $2 \sin^3 x + \cos x \sin 2x = -1$

b. $3 \cos 2x - 5 \cos x - 1 = 0$

6. Find the smallest root of the following equation in the interval $(-\pi, \pi)$:

a. $3 \cos x = 2 \sin^2 x$

Find the smallest root of the following equation in the interval $(0, \pi)$:

b. $5 \sin\left(\frac{3\pi}{2} - x\right) + 2 \cos^2 x + 2 = 0$

B