

Pre-Calculus
Trig. Equations Quiz Review

Name _____

Solve the following for θ if $0 \leq \theta < 2\pi$. Give all answers as exact values in radians. Do not use a calculator.

1. $2 \sin \theta - \sqrt{2} = 0$

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

Solve the following for θ if $0^\circ \leq \theta < 360^\circ$. Do not use a calculator.

3. $4 \sin^2 x - 3 = 0$

4. $\tan 4x = -1$

Give all possible solutions for the angle. Do not use a calculator.

5. $\sin x - 2 \sin x \cos x = 0$ (in radians)

6. $\csc^2 \theta - \csc \theta = 2$ (in degrees)

Solve the following for θ if $0^\circ \leq \theta < 360^\circ$. Use your calculator and given an estimate.

7. $2 \cos \theta + 4 = 5 \cos \theta + 2$

8. Find all possible values for θ . Do not use a calculator. $\sin(6\theta - 50^\circ) = -\frac{1}{2}$

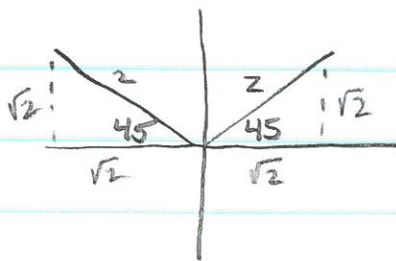
Solutions

① $2\sin\theta - \sqrt{2} = 0$

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

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

$$\frac{\pi}{4}, \frac{3\pi}{4}$$



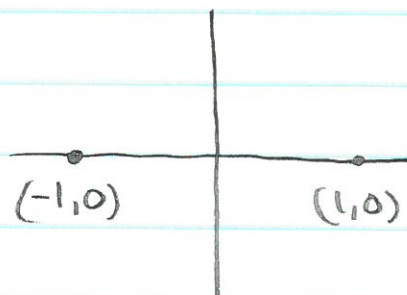
② $\cos^2 x - 1 = 0$

$$\cos^2 x = 1$$

$$\sqrt{\cos^2 x} = \sqrt{1}$$

$$\cos x = \pm 1$$

$$0, \pi$$



③ $4\sin^2 x - 3 = 0$

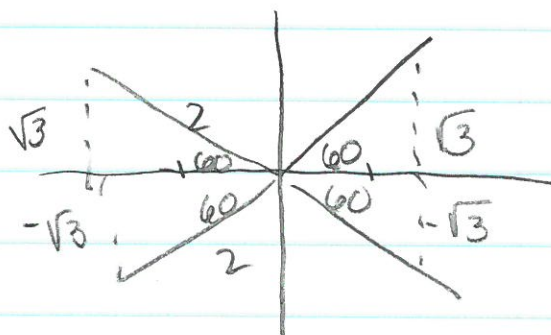
$$4\sin^2 x = 3$$

$$\sin^2 x = \frac{3}{4}$$

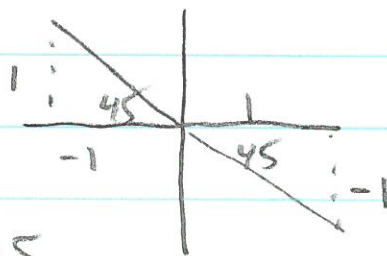
$$\sqrt{\sin^2 x} = \sqrt{\frac{3}{4}}$$

$$\sin x = \pm \frac{\sqrt{3}}{2}$$

$$60^\circ, 120^\circ, 240^\circ, 300^\circ$$



④ $\tan 4x = -1$



$4x = 135$

$4x = 315$

$x = \frac{135^\circ}{4}$

$x = \frac{315^\circ}{4}$

⑤ $\sin x - 2\sin x \cos x = 0$

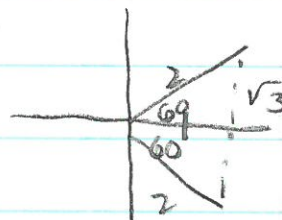
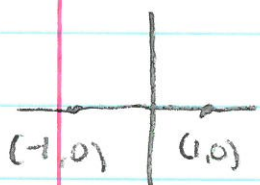
$\sin x (1 - 2\cos x) = 0$

$\sin x = 0$

$1 - 2\cos x = 0$

$-2\cos x = -1$

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



$0 + n2\pi$
 $\pi + n2\pi$

$\frac{\pi}{3} + n2\pi$
 $\frac{5\pi}{3} + n2\pi$

⑥ $\csc^2 \theta - \csc \theta = 2$

$x^2 - x - 2 = 0$

$\csc^2 \theta - \csc \theta - 2 = 0$

$(x-2)(x+1)$

$(\csc \theta - 2)(\csc \theta + 1) = 0$

$\csc \theta - 2 = 0$

$\csc \theta + 1 = 0$

$\csc \theta = 2$

$\csc \theta = -1$

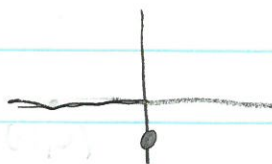
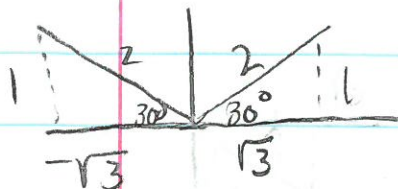
$30 + n360$

$(\sin \theta = \frac{1}{2})$

$(\sin \theta = -1)$

$150^\circ + n360$

$270^\circ + n360$



$$\textcircled{7} \quad 2\cos\theta + 4 = 5\cos\theta + 2$$

$$-3\cos\theta + 4 = 2$$

$$-3\cos\theta = -2$$

$$\cos\theta = \frac{-2}{-3} = \frac{2}{3}$$

$$48.2^\circ, \quad 311.8^\circ$$

$$\textcircled{8} \quad \sin(6\theta - 50) = -\frac{1}{2}$$

$$6\theta - 50 = 210 + n360$$

$$6\theta = 260 + n360$$

$$\theta = 43.3^\circ + n60$$

or

$$6\theta - 50 = 330 + n360$$

$$6\theta = 380 + n360$$

$$\theta = 63.3^\circ + n60$$

