

### 3.10 Trigonometric Equations and Inequalities

AP Precalculus

Name: \_\_\_\_\_

**CA #2**

**Solve each equation for  $0 \leq \theta \leq 2\pi$ . Find the exact value(s) using the unit circle**

1.  $6 \sin \theta = 3\sqrt{3}$

2.  $4 \cos^2 \theta - 2 \cos \theta = 0$

**Solve each equation for  $0 \leq x \leq 2\pi$ . Find the approximate value(s) using a calculator.**

3.  $5 - 4 \sin x = 8$

4.  $\tan^2 x + 2 \tan x = 15$

**Solve each equation. Find ALL exact value(s) using the unit circle**

5.  $-2 = 2 \cos(2x) - 1$

6.  $4 \sin^2 \theta - 1 = 1$

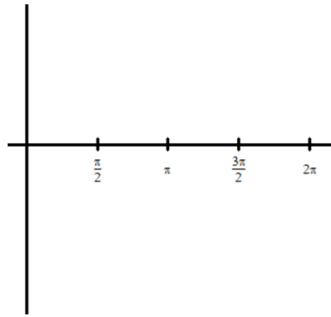
**Solve each equation. Find ALL approximate value(s) using a calculator.**

7.  $5 + 4 \cos \theta = 6$

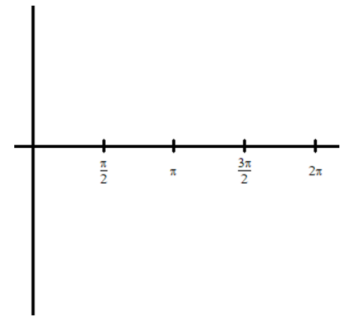
8.  $\tan^2 x = 4 \tan x$

Solve each inequality for  $0 \leq x \leq 2\pi$ . Find the exact value(s). Include a rough sketch.

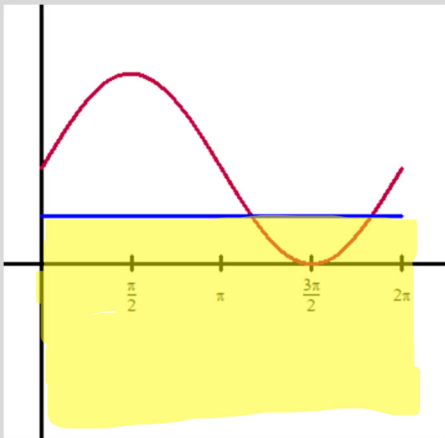
9.  $2 \sin x + 2 < 1$



10.  $2 \cos x + 3 \geq 2$



**Answers to 3.10 CA #2**

1. $\theta = \frac{\pi}{3}$ and $\theta = \frac{2\pi}{3}$	2. $\theta = \frac{\pi}{3}, \frac{\pi}{2}, \frac{3\pi}{2}$ and $\frac{5\pi}{3}$	3. $x = 3.9896$ and $x = 5.435$
4. $x = 1.768$ and $x = 4.909$ $x = 1.249$ and $x = 4.390$	5. $x = \frac{\frac{2\pi}{3} + 2\pi n}{2} = \frac{\pi}{3} + \pi n$ $x = \frac{\frac{4\pi}{3} + 2\pi n}{2} = \frac{2\pi}{3} + \pi n$ where $n$ is an integer	6. $x = \frac{\pi}{4} + \pi n$ $x = \frac{3\pi}{4} + \pi n$ where $n$ is an integer or $x = \frac{\pi}{4} + \frac{\pi}{2}n$
7. $\theta = 1.318 + 2\pi n$ $\theta = 4.965 + 2\pi n$ where $n$ is an integer	8. $\theta = 0 + \pi n$ $\theta = 1.325 + \pi n$ where $n$ is an integer	
9. $\frac{7\pi}{6} < x < \frac{11\pi}{6}$ 	10. $0 \leq x \leq \frac{2\pi}{3}, \frac{4\pi}{3} \leq x \leq 2\pi$ 