Name: _____ Date: _____ Per: _____

PC6-3A: Solving Trig Equations #1

Work problems on a separate sheet of paper!

Solve each equation on the interval $[0,2\pi)$

A. BASIC EQUATIONS: *Isolate the basic trig function, then solve with Unit Circle* **[n] = number of solutions**

1) $\cos\theta = \frac{1}{2}$ **[2]**

2) $\sin\theta = -\frac{\sqrt{3}}{2}$ **[2]**

3) $2\sin\theta - 1 = 0$ **[2]**

4) $\sin\theta + \sqrt{2} = -\sin\theta$ **[2]**

5) $\sqrt{3}\csc\theta - 2 = 0$ **[2]**

6) $3\sin\theta + 1 = \sin\theta$ **[2]**

Be sure to write $\pm$ *for all square roots, and find all solutions*

7) $\tan^2\theta - 1 = 0$ **[4]**

8) $4\sin^2\theta - 1 = 0$ **[4]**

9) $3\sec^2\theta - 4 = 0$ **[4]**

Solve each equation on the interval $[0,2\pi)$.

B. USING FACTORING: *Factor the quadratic, isolate the basic trig function, then solve with Unit Circle.*
[n] = number of solutions

1) $2\cos^2\theta + \cos\theta - 1 = 0$ **[3]**

2) $\sin^2\theta - 1 = 0$ **[2]**

3) $2\sin^2\theta + 3\sin\theta + 1 = 0$ **[3]**

4) $\csc^2\theta - 3\csc\theta + 2 = 0$ **[3]**

5) $\sin^2\theta + \sin\theta = 0$ **[3]**

6) $2\cos^2\theta - \cos\theta = 0$ **[4]**

7) $\cos^2\theta + 3\cos\theta = 0$ **[2]**

8) $\sec^2\theta - \sec\theta - 2 = 0$ **[3]**

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C. FRACTIONALS & MULTIPLES: *Isolate the basic trig function, then solve with Unit Circle. Let x = the value inside the parenthesis (Substitution).*

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

2) $\cos(\frac{1}{3}\theta) = -\frac{1}{2}$ **[1]**

3) $\tan(\frac{1}{4}\theta) = \sqrt{3}$ **[1]**

4) $\csc(\frac{1}{2}\theta) + 2 = 0$ **[0]**

5) $\sqrt{3}\sec(\frac{1}{3}\theta) = 2$ **[1]**

6) $5\cot(\frac{1}{4}\theta) - 5 = 0$ **[1]**

7) $\sin(2\theta) = \frac{1}{2}$ **[4]**

8) $\cos(3\theta) = -\frac{\sqrt{2}}{2}$ **[6]**

9) $\tan(4\theta) = -\sqrt{3}$ **[8]**

10) $3\sin(2\theta) = -3$ **[2]**

11) $-2\sec(3\theta) = -4$ **[6]**

12) $4\csc(4\theta) = 8$ **[8]**

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