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11) $\frac{4\pi}{3}, \frac{5\pi}{3}$

13) $\frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}$

25) 650, 2.956, 3.791, 6.097

26) 3.617, 5.808

28) $0, \pi, \frac{2\pi}{3}, \frac{4\pi}{3}$

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Group work:

Day 5 Unit 8

I. Find the exact values in radians for each:

a) $\sin^{-1}\left(\frac{-\sqrt{2}}{2}\right)$

b) $\csc^{-1}(2)$

c) $\cot^{-1}(-1)$

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II. Evaluate. Exact values leave answers in terms of π or simplest radical form:

a) $\cos^{-1}(\sin(\frac{2\pi}{3}))$

b) $\cos(\sin^{-1}.2)$

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Find all solutions in the interval $[0, 2\pi]$: Show all work that we have done in class: Exact value where possible otherwise round your answers to nearest thousandth

1. $\tan x = -\frac{\sqrt{3}}{3}$

2. $\sec x = 8$

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

4. $5 \cos^2 x + 6 \cos x = 8$

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5. $\tan^2 x + 5 \tan x = -3$

6. $2 \sin^2 x + \sin x = 0$

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7. $\cot x = .4$

8. $\csc^2 x - 2\csc x = 3$

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Name Key Period _____
 Group work: Day 5 Unit 8

I. Find the exact values in radians for each:

a) $\sin^{-1}(-\frac{\sqrt{2}}{2}) = -\frac{\pi}{4}$ b) $\csc^{-1}(2) \rightarrow \sin^{-1}(\frac{1}{2}) = \frac{\pi}{6}$ c) $\cot^{-1}(-1) \rightarrow \tan^{-1}(-1) = -\frac{\pi}{4}$

II. Evaluate. Exact values leave answers in terms of π or simplest radical form:

a) $\cos^{-1}(\sin(\frac{2\pi}{3})) = \cos^{-1}(-\frac{\sqrt{3}}{2}) = \frac{5\pi}{6}$ b) $\cos(\sin^{-1} 2) = \frac{2\sqrt{6}}{5}$

Find all solutions in the interval $[0, 2\pi]$: Show all work that we have done in class: Exact value where possible otherwise round your answers to nearest thousandth

1. $\tan x = -\frac{\sqrt{3}}{3}$ $\{ \frac{5\pi}{6}, \frac{11\pi}{6} \}$

2. $\sec x = 8$ $\cos x = \frac{1}{8}$
 $\alpha = 1.445...$
 $x_1 = 1.445$
 $x_4 = 4.838$
 $\{1.445, 4.838\}$

3. $3\sin^2 x + 2\sin x = 4$
 $3\sin^2 x + 2\sin x - 4 = 0$
 $b^2 - 4ac = 4 - 4(3)(-4) = 52$
 $\sin x = \frac{-2 \pm \sqrt{52}}{6}$
 $\sin x = .8685...$ $\sin x = -1.5351...$
 $\alpha = 1.0522...$ $\emptyset$
 $x_1 = 1.052$ $\emptyset$
 $x_2 = 2.089$ $\{1.052, 2.089\}$

4. $5\cos^2 x + 6\cos x = 8$ $p: -40$
 $5\cos^2 x + 6\cos x - 8 = 0$ $S: \frac{6}{10, -4}$
 $(5\cos x - 4)(\cos x + 2) = 0$
 $\cos x = \frac{4}{5}$ $\cos x = -2$
 $\alpha = .6435...$ $\emptyset$
 $x_1 = .644$
 $x_4 = 5.640$
 $\{.644, 5.640\}$

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5. $\tan^2 x + 5 \tan x = -3$

$$\tan^2 x + 5 \tan x + 3 = 0$$

$$b^2 - 4ac = 25 - 4(1)(3) = 13$$

$$\tan x = \frac{-5 \pm \sqrt{13}}{2}$$

+

$$\tan x = -0.6972... \quad \tan x = -4.3027...$$

$$\alpha = 0.6088...$$

$$x_2 = 2.533$$

$$x_4 = 5.674$$

$$\{1.799, 2.533, 4.941, 5.674\}$$

7. $\cot x = \frac{2}{5}$

$$\cot x = \frac{2}{5}$$

$$\tan x = \frac{5}{2}$$

$$\alpha = 1.1902...$$

$$x_1 = 1.190$$

$$x_3 = 4.332$$

$$\{1.190, 4.332\}$$

6. $2 \sin^2 x + \sin x = 0$

$$\sin x (2 \sin x + 1) = 0$$

$$\sin x = 0 \quad \sin x = -\frac{1}{2}$$

$$x = 0, \pi, 2\pi \quad \alpha = \frac{\pi}{6}$$

$$x_3 = \frac{7\pi}{6}$$

$$x_4 = \frac{11\pi}{6}$$

$$\{0, \pi, \frac{\pi}{6}, \frac{11\pi}{6}, 2\pi\}$$

8. $\csc^2 x - 2 \csc x = 3$

$$\csc^2 x - 2 \csc x - 3 = 0$$

$$(\csc x - 3)(\csc x + 1) = 0$$

$$\csc x = 3 \quad \csc x = -1$$

$$\sin x = \frac{1}{3} \quad \sin x = -1$$

$$\alpha = .3398... \quad x = \frac{3\pi}{2}$$

$$x_1 = .340$$

$$x_2 = 2.802$$

$$\{.340, 2.802, \frac{3\pi}{2}\}$$

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