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1) $\frac{\pi}{6}, \frac{11\pi}{6}$

3) $\frac{2\pi}{3}, \frac{5\pi}{3}$

9) 1.712, 4.571

16) 0

18) $\frac{\pi}{6}, \frac{5\pi}{6}$

30) $0, \frac{\pi}{2}, \pi$

33) $\frac{3\pi}{4}, \frac{7\pi}{4}$

$$2\sec x \tan x + 2\sec x + \tan x + 1 = 0$$

$$2\sec x (\tan x + 1) + 1(\tan x + 1) = 0$$

$$2\sec x + 1 = 0 \quad \tan x + 1 = 0$$

$$\sec x = -\frac{1}{2} \quad \tan x = -1$$

$$\cos x = -2 \quad \alpha = \frac{\pi}{4}$$

$$\text{reject} \quad \text{QII} \quad \text{QIV}$$

Jan 19-3:51 PM

Trig Equations using the quadratic formula:

Review:

Solve for x between $[0, 2\pi)$:

$2\tan^2 x - 1 = -\tan x$

$$\left\{ \frac{3\pi}{4}, \frac{7\pi}{4}, \underline{.4636}, \underline{3.605} \right\}$$

$$2\tan^2 x + \tan x - 1 = 0$$

$$2\tan^2 x + 2\tan x - \tan x - 1 = 0$$

$$2\tan x(\tan x + 1) - 1(\tan x + 1) = 0$$

$$(2\tan x - 1)(\tan x + 1) = 0$$

$2\tan x - 1 = 0$ $\tan x = \frac{1}{2}$ $\alpha = \underline{.4636} \rightarrow \times$ $\text{QI } \underline{.4636} \times$ $\text{QIII } \underline{3.605}$ $\pi + \times$	$\tan x + 1 = 0$ $\tan x = -1$ $\alpha = \frac{\pi}{4}$ $\text{QII} = \frac{3\pi}{4}$ $\text{QIV} = \frac{7\pi}{4}$
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Jan 19-8:49 AM

Solve each below between $[0, 2\pi]$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

1. $2\tan^2 x - 1 = 3\tan x$

$$2\tan^2 x - 3\tan x - 1 = 0$$

$$a: 2 \quad b: -3 \quad c: -1$$

$$(-3)^2 - 4(2)(-1) = 17$$

$$\tan x = \frac{3 \pm \sqrt{17}}{2(2)}$$

$$\tan x = \frac{3 + \sqrt{17}}{4} \quad \tan x = \frac{3 - \sqrt{17}}{4}$$

$$\tan x = 1.781$$

$$\alpha = \tan^{-1}(1.781)$$

$$= 1.059$$

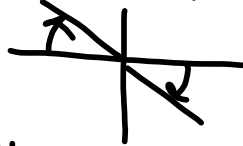


Q I 1.059

Q III $\pi + x = 4.201$

$$\tan x = -.281$$

$$\alpha = \tan^{-1}(.281) = .274$$



Q II $\pi - x = 2.868$

Q IV $2\pi - x = 6.009$

$$\{1.059, 2.868, 4.201, 6.009\}$$

Jan 19-8:50 AM

2. $2\cos^2 \theta = 5\cos \theta + 1$

$$2\cos^2 \theta - 5\cos \theta - 1 = 0$$

$$a: 2 \quad b: -5 \quad c: -1$$

$$(-5)^2 - 4(2)(-1) = 33$$

$$\cos \theta = \frac{5 \pm \sqrt{33}}{2(2)}$$

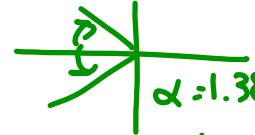
$$\cos \theta = \frac{5 + \sqrt{33}}{4}$$

$$\cos \theta = 2.686$$

reject

$$\cos \theta = \frac{5 - \sqrt{33}}{4}$$

$$\cos \theta = -.186$$



$$\alpha = 1.384$$

Q II $\pi - x = 1.758$

Q III $\pi + x = 4.525$

$$\{1.758, 4.525\}$$

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

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

$$a: 3 \quad b: -3 \quad c: -2$$

$$(-3)^2 - 4(3)(-2) = 33$$

$$\sin x = \frac{3 \pm \sqrt{33}}{6}$$

$$\sin x = \frac{3 + \sqrt{33}}{6}$$

$$\sin x = 1.457$$

reject

$$\sin x = \frac{3 - \sqrt{33}}{6}$$

$$\sin x = -.457$$



$$\alpha = .475$$

$$\{3.617, 5.808\}$$

Q III 3.617

Q IV 5.808

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4. $\csc^2 x - 6\csc x + 4 = 0$

$a = 1 \quad b = -6 \quad c = 4$
 $(-6)^2 - 4(1)(4) = 20$

$\csc x = \frac{6 \pm \sqrt{20}}{2}$

$\csc x = \frac{6 + \sqrt{20}}{2}$

$\sin x = \frac{2}{6 + \sqrt{20}}$

$\sin x = .1910$

$\alpha = \sin^{-1}(.1910)$
 $= .192$



Q1.192

QII $\pi - x = 2.949$

$\{.192, 2.949\}$

$\csc x = \frac{6 - \sqrt{20}}{2}$

$\sin x = \frac{2}{6 - \sqrt{20}}$

$\sin x = 1.3090$

reject

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Feb 2-2:54 PM