

Page 584

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

① Chart

② Unit Circle

③ Calculator

$$\frac{2\cos^2 x}{\sqrt{\cos^2 x}} = 1 \quad \cos x = \pm \frac{\sqrt{2}}{2}$$

$$\cot^2 x + 4\cot x = 7$$

$$\cot^2 x + 4\cot x - 7 = 0$$

$$\cot x = \frac{-4 \pm \sqrt{44}}{2}$$

$$\tan x = \frac{2}{-4 \pm \sqrt{44}} \quad \left| \quad \tan x = \frac{2}{-4 - \sqrt{44}} \right.$$

$$\tan x = .7595$$

$$\alpha: \tan^{-1}(.7595) = .6496 \quad \tan x = -.1881$$

Q1 .6496

$$\alpha = .186$$

Q11 $\pi + x = 3.7912$

Q11 $\pi - x = \underline{\hspace{2cm}}$

Q1V $2\pi - x = \underline{\hspace{2cm}}$

Jan 19-3:51 PM

Feb 11-10:02 AM

Pre Calc
Chpt 8 day6

Find the exact value in radians:

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

Q1, QII

$\cos(\frac{2\pi}{3})$

$-\frac{1}{2}$

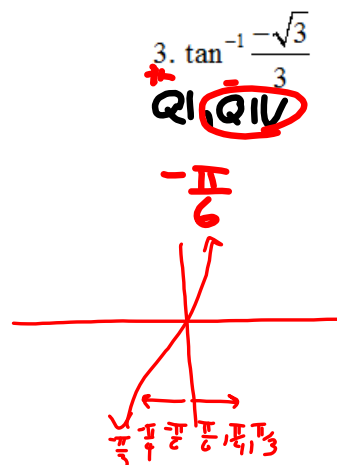
2. $\csc^{-1}\sqrt{2}$

QI, QIV

$\sin^{-1}\frac{1}{\sqrt{2}}$

$\sin^{-1}\frac{\sqrt{2}}{2}$

$\frac{\pi}{4}$



Jan 19-8:49 AM

More than one trig function in a trig equation:

1. Look for identities to replace trig functions $\sin^2 x + \cos^2 x = 1$
2. Get the equation such that there is only one trig function when it's a quadratic
3. When it's not quadratic, still set = 0 and GCF factor

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

1. $\sin x \tan x = \sin x$

$\sin x \tan x - \sin x = 0$

$\sin x (\tan x - 1) = 0$

$\sin x = 0$

$0, \pi, 2\pi$

$\tan x - 1 = 0$

$\tan x = 1$

$x = \frac{\pi}{4}$

$\frac{\pi}{4}, \frac{5\pi}{4}$

$\{0, \frac{\pi}{4}, \pi, \frac{5\pi}{4}, 2\pi\}$

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2. $2\tan x \sin^2 x = \tan x$

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

$$\tan x (2\sin^2 x - 1) = 0$$

$$\tan x = 0$$

$$0, \pi, 2\pi$$

$$2\sin^2 x - 1 = 0$$

$$\sqrt{\sin^2 x} = \sqrt{1/2}$$

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

$$\alpha = \pi/4$$

$$\pi/4, 3\pi/4, 5\pi/4, 7\pi/4$$

$$\{0, \pi/4, 3\pi/4, \pi, 5\pi/4, 7\pi/4, 2\pi\}$$

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3. $\sin^2 \theta - 3\cos^2 \theta = 0$

Substitution

$$\sin^2 \theta + \cos^2 \theta = 1$$

$$\sin^2 \theta = 1 - \cos^2 \theta$$

$$1 - \cos^2 \theta - 3\cos^2 \theta = 0$$

$$1 - 4\cos^2 \theta = 0$$

$$1 = 4\cos^2 \theta$$

$$\sqrt{\cos^2 \theta} = \sqrt{1/4}$$

$$\cos \theta = \pm 1/2$$

$$\alpha = \pi/3$$

$$\{\pi/3, 2\pi/3, 4\pi/3, 5\pi/3\}$$

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4. $3\cos^2 x - 5\sin x = 4$ $\cos^2 x = 1 - \sin^2 x$

$$3(1 - \sin^2 x) - 5\sin x - 4 = 0$$

$$3 - 3\sin^2 x - 5\sin x - 4 = 0$$

$$[-3\sin^2 x - 5\sin x - 1 = 0] \times -1$$

$$3\sin^2 x + 5\sin x + 1 = 0$$

$$a = 3 \quad b = 5 \quad c = 1$$

$$(5)^2 - 4(3)(1) = 13$$

$$\sin x = \frac{-5 \pm \sqrt{13}}{6}$$

$$\sin x = \frac{-5 + \sqrt{13}}{6}$$

$$\sin x = \frac{-5 - \sqrt{13}}{6}$$

$$\sin x = \frac{-2.324}{6}$$

$$\alpha = \sin^{-1}(-.2324) = .235$$

$$Q III \quad \pi + x = 3.376$$

$$Q IV \quad 2\pi - x = 6.049$$

$$\{3.376, 6.049\}$$

5. $\sin 2x + \sin x + 2\cos x + 1 = 0$

$$2\sin x \cos x + \sin x + 2\cos x + 1 = 0$$

$$\sin 2x = 2\sin x \cos x$$

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

$$2\cos x + 1 = 0$$

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

$$\alpha = \frac{\pi}{3}$$

$$2\pi/3, 4\pi/3$$

$$\sin x + 1 = 0$$

$$\sin x = -1$$

$$3\pi/2$$

$$\left\{ \frac{2\pi}{3}, \frac{4\pi}{3}, \frac{3\pi}{2} \right\}$$

Jan 19-8:53 AM

Feb 7-3:33 PM