


Homework Questions?


9d) 10 def 11 13

a) $2 \csc x + 17 = 15 + \csc x$
 $\csc x = -2$
 $\frac{1}{\sin x} = -2$
 $\sin x = -\frac{1}{2}$



$\therefore x = \pi + \frac{\pi}{6}$ or $x = 2\pi - \frac{\pi}{6}$
 $= \frac{7\pi}{6}$ or $x = \frac{11\pi}{6}$


10e) $\cos 2x = -\frac{1}{2}$ Let $A = 2x$
 $0 \leq x \leq 2\pi$
 $0 \leq 2x \leq 4\pi$
 $\cos A = -\frac{1}{2}$



$\therefore A = \pi - \frac{\pi}{3}$ or $A = \pi + \frac{\pi}{3}$
 $A = \frac{2\pi}{3}$ or $A = \frac{4\pi}{3}$
 $2x = \frac{2\pi}{3}$ or $2x = \frac{4\pi}{3}$
 $x = \frac{\pi}{3}$ or $x = \frac{2\pi}{3}$

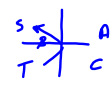
Also $A = \frac{2\pi}{3} + 2\pi$ or $A = \frac{4\pi}{3} + 2\pi$
 $A = \frac{8\pi}{3}$ or $A = \frac{10\pi}{3}$
 $x = \frac{8\pi}{6} = \frac{4\pi}{3}$ or $x = \frac{10\pi}{6} = \frac{5\pi}{3}$

10f) $\cos \frac{x}{2} = \frac{\sqrt{3}}{2}$ $0 \leq x \leq 2\pi$
 $0 \leq \frac{x}{2} \leq \pi$
 $0 \leq A \leq \pi$
 Let $A = \frac{x}{2}$



$\cos A = \frac{\sqrt{3}}{2}$
 $A = \frac{\pi}{6}$
 $\frac{x}{2} = \frac{\pi}{6}$
 $x = \frac{\pi}{3}$

11) $t(d) = -28 \cos \frac{2\pi}{365} d + 10$
 $32 = -28 \cos \frac{2\pi}{365} d + 10$
 $22 = -28 \cos \frac{2\pi}{365} d$
 $-\frac{22}{28} = \cos \frac{2\pi}{365} d$ Let $A = \frac{2\pi}{365} d$
 $-\frac{22}{28} = \cos A$



$\cos^{-1}(\frac{-22}{28}) = A$
 $2.47 \approx A$ or $3.81 \approx A$
 $B = \pi - A$
 $\therefore 0.67$
 $A = 2.47$
 $\frac{2\pi}{365} d = 2.47$
 $d = \frac{2.47}{\frac{2\pi}{365}} \times 365$
 $d = 143$
 $d = \frac{3.81}{\frac{2\pi}{365}} \times 365$
 $= 221$

Lesson 7.06 - Solving Quadratic Trigonometric Identities



Learning Goals:

- I can solve for the unknown angle(s) in any quadratic trigonometric equation
- I realize that I may need to apply previously established identities to do so
- I can apply what I have learned in unfamiliar settings

$$5 \sin^2(x) + 6 \sin(x) - 5 = 0$$

$$\sin(x) = \frac{-6 \pm \sqrt{(6)^2 - 4(5)(-5)}}{2(5)}$$

$$\sin(x) = \frac{-6 \pm \sqrt{136}}{10}$$

$$\sin(x) = \frac{-3 \pm \sqrt{34}}{5}$$

Example:

Solve $2\sec^2 x - 5\tan x = 5$, $0 \leq \theta \leq 2\pi$

Round all final answers to the nearest hundredth

$$2\sec^2 x - 5\tan x - 5 = 0$$

$$2(1 + \tan^2 x) - 5\tan x - 5 = 0$$

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

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

$$2A^2 - 5A - 3 = 0$$

$$(2A + 1)(A - 3) = 0$$

$2A + 1 = 0$

$A = -\frac{1}{2}$

$\Rightarrow \tan x = -\frac{1}{2}$

$B = \tan^{-1}\left(\frac{1}{2}\right)$

≈ 0.46

 \therefore

$x = \pi - 0.46$ or

≈ 2.68

$x = 2\pi - 0.46$

≈ 5.82

Remember:

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

Let $A = \tan x$

$A - 3 = 0$

$A = 3$

$\tan x = 3$

$B = \tan^{-1}(3)$

≈ 1.25

$x = 1.25$

$x = \pi + 1.25$

≈ 4.39

S	A
T	C

S	A
T	C

Homework:

pg. 436 - 437 #4d*, 5c*, 6b*c*, 7a*, 7e, 8d*, 8f*, 9d *, 14, 17

* means no rounding!!!!

When you finish an exam and everyone is arguing whether the answer was π or π^2 but you wrote syntax error



$$3 \tan^2 \theta = 1$$

$$\tan^2 \theta = \frac{1}{3}$$

$$\tan \theta = \pm \sqrt{\frac{1}{3}}$$

$$\tan \theta = \pm \frac{1}{\sqrt{3}}$$

$$0 \leq \theta \leq 2\pi$$

$$\tan \theta = \frac{1}{\sqrt{3}}$$

$$\tan \theta = \frac{1}{\sqrt{3}} \text{ or } -\frac{1}{\sqrt{3}}$$