Solving Trig Equations II (6.4) p320 day 8

Men & Women

senses
pain
confidence & worry
heart attacks
giving directions

Solving Trig Equations II (6.4) p320 day 8

HW: p320 #2c, 3bc

3. Rewrite each equation in terms of sine only. Then, solve algebraically for $0 \le x < 2\pi$.
   a) $\cos 2x - 3\sin x = 2$
   b) $2\cos^2 x - 3\sin x - 3 = 0$
   c) $3\csc x - \sin x = 2$
   d) $\tan^2 x + 2 = 0$

2. Solve each equation algeb domain $0° \le x < 360°$. Ve graphically.
   a) $\cos x - \cos 2x = 0$
   b) $\sin^2 x - 3\sin x = 4$
   c) $\tan x \cos x \sin x - 1 =$

$\frac{3}{\sin x} - x^x = 2^x$

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

c) $\frac{3}{\sin x} - \sin x = 2$
$3 - \sin^2 x = 2\sin x$

assignment due next class

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ex1: Solve $\cos 2x + 1 - \cos x = 0$ $[0, 2\pi)$

$2\cos^2 x - 1 + 1 - \cos x = 0$
$2\cos^2 x - \cos x = 0$
$\cos x(2\cos x - 1) = 0$
$\cos x = 0$ $\quad \cos x = \frac{1}{2}$
$x = \frac{\pi}{2}, \frac{3\pi}{2}$ $\quad x = \frac{\pi}{3}, \frac{5\pi}{3}$

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ex2: Solve $\sin^2 x = \frac{1}{2}\tan x \cos x$ $[0, 2\pi)$

$2\sin^2 x = \frac{\sin x}{\cos x}\cos x$ $\quad \cos x \neq 0$
$2\sin^2 x = \sin x$
$2\sin^2 x - \sin x = 0$
$\sin x(2\sin x - 1) = 0$
$\sin x = 0$ $\quad \sin x = \frac{1}{2}$
$x = 0, \pi$ $\quad x = \frac{\pi}{6}, \frac{5\pi}{6}$

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ex3: Solve $2\sin x = 7 - 3\csc x$ $x \in \mathbb{R}$

$2\sin x + \frac{3}{\sin x} = 7$ $\quad \sin x \neq 0$
$2\sin^2 x + 3 = 7\sin x$
$2\sin^2 x - 7\sin x + 3 = 0$
$(2\sin x - 1)(\sin x - 3) = 0$
$\sin x = \frac{1}{2}$ $\quad \sin x = 3$ no soln
$x = \frac{\pi}{6}, \frac{5\pi}{6}$
$x = \frac{\pi}{6} + 2n\pi$
$x = \frac{5\pi}{6} + 2n\pi$

$2a^2 - 7a + 3$ m: 6, a: -7, r: 1
$2a^2 - 6a - a + 3$
$2a(a-3) - 1(a-3)$
$(2a-1)(a-3)$

3a

9

9. $\cos x \sin 2x - 2\sin x = -2$
$2\sin x \cos x \cdot \cos x - 2\sin x = -2$
$\sin x \cos^2 x - \sin x = -1$
$\sin x(1 - \sin^2 x) - \sin x = -1$
$\sin x - \sin^3 x - \sin x = -1$
$\sin^3 x = 1$
$\sin x = 1$

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HW: p320#4, 5

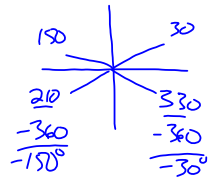
assignment due Monday
(next class)

#4. $4\sin^2 x = 1$ $[-180°, 180)$

$\sin^2 x = \frac{1}{4}$

$\sin x = \pm\frac{1}{2}$

$x = -150°, -30°$
$30°, 150°$




5. $2\tan^2 x + 3\tan x - 2 = 0$ $m=4$ $a\ 3$ $[0, 2\pi)$ $4, -1$

$2\tan^2 x + 4\tan x - \tan x - 2 = 0$

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

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

$\tan x = \frac{1}{2}$ calculator $x = 0.46$ add $\pi$ $= 3.60$

$\tan x = -2$ ← not in domain $x = -1.11$ $+\pi$ $= 2.03$ $+\pi$ $= 5.17$

Attachments

- quiz9p1.jpg
- assignment4.pdf