7-2 Solving Trigonometric Equations

Objectives:

7-2a: I can solve trig equations algebraically.

Feb 9-10:44 AM

Solve for theta without a calculator. (Hint: use the unit circle) $0 \le \theta < 2\pi$

$\sin\theta = -\frac{1}{2}$

$\theta = \frac{7\pi}{6}, \frac{11\pi}{6}$

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

$\theta = \frac{\pi}{6}, \frac{7\pi}{6}$

$\sec\theta = -2$

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

$\theta = \frac{2\pi}{3}, \frac{4\pi}{3}$

$\cot\theta = -\sqrt{3}$

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

$\theta = \frac{5\pi}{6}, \frac{11\pi}{6}$

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$-3 = -3 - \cos\theta$

$0 = -\cos\theta$

$\cos\theta = 0$

$\theta = \frac{\pi}{2}, \frac{3\pi}{2}$

$12 - 6\sin\theta = 6$

$-6\sin\theta = -6$

$\sin\theta = 1$

$\theta = \frac{\pi}{2}$

$-3 + 3 = \left(\frac{1}{4}\tan\theta\right)4 = \left(\frac{-12-\sqrt{3}}{4} + 3\right)4$

$\tan\theta = -12 - \sqrt{3} + 12$

$\tan\theta = -\sqrt{3}$

$\theta = \frac{2\pi}{3}, \frac{5\pi}{3}$

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What about these?

$\cos\theta = 2$

no solution

$\sec\theta = \frac{\sqrt{3}}{2}$

$\cos\theta = \frac{2\sqrt{3}}{3}$

$4 - \frac{1}{5}\cos\theta = \frac{20-\sqrt{2}}{5}$

$-4 \quad -\frac{4}{5}20$

$= \frac{20 - \sqrt{2} - 20}{5}$

$5\left(-\frac{1}{5}\cos\theta\right) = \left(+\frac{\sqrt{2}}{5}\right)5$

$\cos\theta = \sqrt{2}$

no solution

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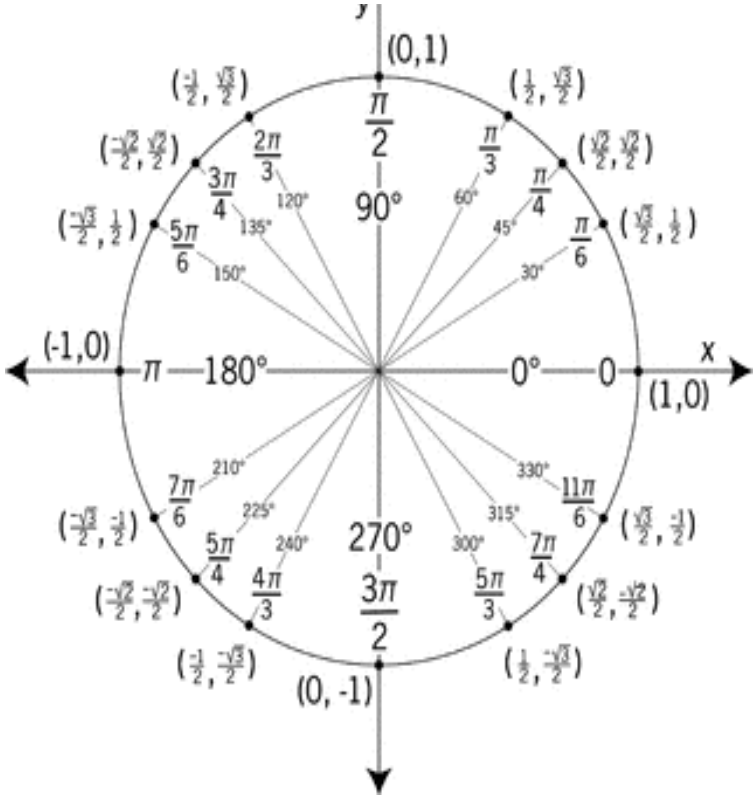

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