

Trigonometric Equations Review

Solve for θ exactly (in radians, $0 \leq \theta < 2\pi$).

(1) $\cos \theta = 1/5$

(2) $\sin \theta = -1/3$

(3) $\cos \theta = -5/7$

(4) $\tan \theta = 3/2$

Find all solutions to the following equations.

(5) $3 \tan^2 x - \sec^2 x - 5 = 0$

(6) $4 - 2 \sin^2 x - 5 \cos x = 0$

(7) $\sin 2x = 3 \sin x$

Solve the following equations for $0 \leq x < 2\pi$

(8) $\cos x \csc 4x + \cos x - 2 \csc 4x - 2 = 0$

(9) $\cos(2x) = 2 + 5 \cos x$

Answers for Math 8 Review (3.3-3.8)

(1) $\theta = \cos^{-1}(1/5) \approx 1.3694$

$\theta = 2\pi - \cos^{-1}(1/5) \approx 4.9137$

(2) $\theta = \sin^{-1}(-1/3) + 2\pi$ or $2\pi - \sin^{-1}(1/3) \approx 5.9433$

$\theta = \pi - \sin^{-1}(-1/3)$ or $\pi + \sin^{-1}(1/3) \approx 3.4814$

(3) $\theta = \cos^{-1}(-5/7)$ or $\pi - \cos^{-1}(5/7) \approx 2.3664$

$\theta = 2\pi - \cos^{-1}(-5/7)$ or $\pi + \cos^{-1}(5/7) \approx 3.9168$

(4) $\theta = \tan^{-1}(3/2) \approx .9828$

$\theta = \pi + \tan^{-1}(3/2) \approx 4.1244$

(5) $x = \frac{\pi}{3} + \pi k, \frac{2\pi}{3} + \pi k, k$ an integer

(6) $x = \frac{\pi}{3} + 2\pi k, \frac{5\pi}{3} + 2\pi k, k$ an integer

(7) $x = \pi k, k$ an integer

(8) $x = \frac{3\pi}{8}, \frac{7\pi}{8}, \frac{11\pi}{8}, \frac{15\pi}{8}$

(9) $x = \frac{2\pi}{3}, \frac{4\pi}{3}$