

SOLVING EQUATIONS – EXTRA PRACTICE



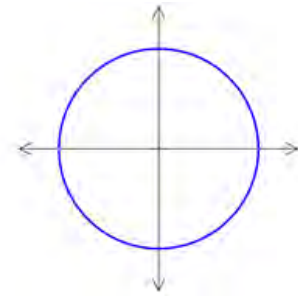
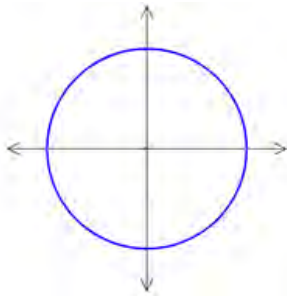
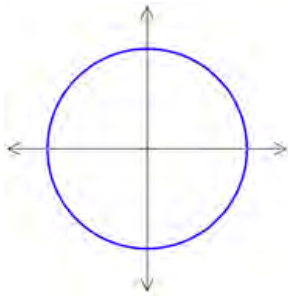
Alberta Ed Learning Outcome: Solve, algebraically and graphically, first and second degree trigonometric equations, with their domain expressed in degrees and radians. [CN, PS, R, T, V]

1. State the solutions to each equation, for $-180^\circ \leq \theta < 180^\circ$:

(a) $2\sin \theta + 1 = 0$

(b) $\tan \theta + 1 = 0$

(c) $\sqrt{3}\sec \theta + 2 = 0$



2. State the general solution (*in radians*) to each equation:

(a) $\tan x + 1 = 0$

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

3. Solve each equation on $0 \leq \theta < 2\pi$, and provide a **general solution**. (*nearest hundredth of a radian*)

(a) $\tan \theta = 2.5$

(b) $\csc \theta = 5$

4. Solve each equation on $0 \leq x < 2\pi$, and provide a **general solution**.

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

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

5. Solve on $0^\circ \leq \theta < 360^\circ$: $2\cos^2\theta + \cos\theta = 0$

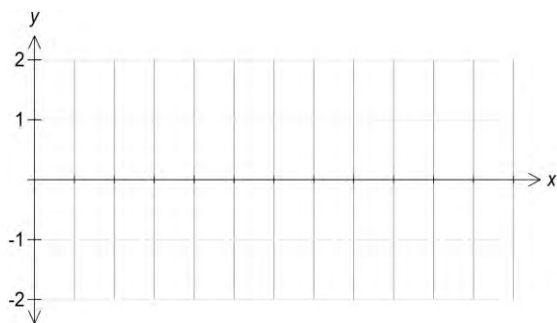
6. Determine the general solution to $\tan^2\theta - 1 = 0$. (in Radians)

7. Solve for θ , on $180^\circ \leq \theta \leq 360^\circ$: $(2 - \sqrt{3}\sec\theta)(\sec\theta + 3) = 0$. (answer to the nearest degree)

8. Consider the equation $2\cos^2\theta + \sin\theta - 1 = 0$ on $0 \leq \theta < 2\pi$
(a) Solve algebraically by factoring and referring to the unit circle.

(b) State the solutions on $-\pi \leq \theta < \pi$

(c) Verify your solutions graphically. Provide a sketch here, and label all solutions.



9. Algebraically solve the equation $\cos^2 x - 4\cos x = 5$. (on $0 \leq \theta < 360^\circ$)

10. Algebraically solve the equation $\cos 2x = \sqrt{3}\cos x - 1$ on $0 \leq \theta < 2\pi$, and provide a **general solution**.

11. Algebraically solve the following equations on $0 \leq \theta < 2\pi$:

(a) $\sin^2 x = \tan x \cos x$

(b) $2\csc^2 x + \csc x - 1 = 0$

(b) $\sin 2x - 1 = \cos 2x$

(c) $2\sin^2 x - 3\cos 2x = 3$

12. State the general solution to the equation $\sin(2\theta) - \cos\theta = 0$. (Expressed in degrees)