Answer key

The method: Solving trig equations

Get the trig function alone, find the reference angle, and list every angle from 0 to 2π in the quadrants with the right sign.

$2\sin x - 1 = 0,\ 0 \le x < 2\pi$: $x = \frac{\pi}{6}$ or $x = \frac{5\pi}{6}$

$\sin x = \frac{1}{2}$ get sin x alone

$x = \frac{\pi}{6}$ or $x = \frac{5\pi}{6}$ every angle from 0 to 2π with that value

$3\tan x + \sqrt{3} = 0,\ 0 \le x < 2\pi$: $x = \frac{5\pi}{6}$ or $x = \frac{11\pi}{6}$

$\tan x = -\frac{\sqrt{3}}{3}$ get tan x alone

$x = \frac{5\pi}{6}$ or $x = \frac{11\pi}{6}$ every angle from 0 to 2π with that value

$2\cos x - 1 = 0,\ 0 \le x < 2\pi$: $x = \frac{\pi}{3}$ or $x = \frac{5\pi}{3}$

$\cos x = \frac{1}{2}$ get cos x alone

$x = \frac{\pi}{3}$ or $x = \frac{5\pi}{3}$ every angle from 0 to 2π with that value

Problems 1 and 2 worked out · Version 0A

$2\cos x - 1 = 0,\ 0 \le x < 2\pi$: $x = \frac{\pi}{3}$ or $x = \frac{5\pi}{3}$

$\cos x = \frac{1}{2}$ get cos x alone

$x = \frac{\pi}{3}$ or $x = \frac{5\pi}{3}$ every angle from 0 to 2π with that value

$2\cos x - \sqrt{2} = 0,\ 0 \le x < 2\pi$: $x = \frac{\pi}{4}$ or $x = \frac{7\pi}{4}$

$\cos x = \frac{\sqrt{2}}{2}$ get cos x alone

$x = \frac{\pi}{4}$ or $x = \frac{7\pi}{4}$ every angle from 0 to 2π with that value

Solving trig equations · Version 0A

1) $x = \frac{\pi}{3}$ or $x = \frac{5\pi}{3}$ 2) $x = \frac{\pi}{4}$ or $x = \frac{7\pi}{4}$

Answer key

3) $x = \frac{\pi}{3}$ or $x = \frac{4\pi}{3}$ 4) $x = \frac{5\pi}{4}$ or $x = \frac{7\pi}{4}$

5) $x = \frac{\pi}{3}$ or $x = \frac{2\pi}{3}$ 6) $x = \frac{\pi}{6}$ or $x = \frac{5\pi}{6}$

7) $x = \frac{\pi}{4}$ or $x = \frac{3\pi}{4}$ 8) $x = \frac{3\pi}{4}$ or $x = \frac{7\pi}{4}$

9) $x = \frac{\pi}{6}$ or $x = \frac{11\pi}{6}$ 10) $x = \frac{\pi}{3}$ or $x = \frac{2\pi}{3}$

11) $x = \frac{\pi}{3}$ or $x = \frac{2\pi}{3}$ 12) $x = \frac{4\pi}{3}$ or $x = \frac{5\pi}{3}$

13) $x = \frac{\pi}{4}$ or $x = \frac{3\pi}{4}$ 14) $x = \frac{\pi}{6}$ or $x = \frac{11\pi}{6}$

15) $x = \frac{2\pi}{3}$ or $x = \frac{5\pi}{3}$