Trig Identity Questions – Find all the Values in the Region

$$sinx = \frac{\sqrt{2}}{2} \qquad 0 \leq x \leq 360$$

$$tanx = 1 \qquad -180 \leq x \leq 180$$

$$sin2x = \frac{\sqrt{3}}{2} \qquad 0 \leq x \leq 2\pi$$

$$cos\left(\frac{1}{2}x\right) = \frac{\sqrt{3}}{2} \qquad -\pi \leq x \leq \pi$$

$$2cos^2x = cosx \qquad -180 \leq x \leq 180$$

$$cos^2x - cosx - 2 = 0 \qquad 0 \leq x \leq 2\pi$$

Extension…

$$3sinx = \sqrt{3}cosx \qquad 0 \leq x \leq 360$$

$$x \neq 90,270$$

But why?

Trig Identity Questions – Answers

$sinx = \frac{\sqrt{2}}{2}, 0 \leq x \leq 360$ $\quad x = 45, 135$

$tanx = 1, -180 \leq x \leq 180$ $\quad x = 45, -135$

$sin2x = \frac{\sqrt{3}}{2}, 0 \leq x \leq 2\pi$ $\quad 2x = \frac{\pi}{3}, \frac{2\pi}{3}, \frac{7\pi}{3}, \frac{8\pi}{3}$
$\Rightarrow x = \frac{\pi}{6}, \frac{\pi}{3}, \frac{7\pi}{6}, \frac{4\pi}{3}$

$cos\left(\frac{1}{2}x\right) = \frac{\sqrt{3}}{2}, -\pi \leq x \leq \pi$ $\quad \frac{x}{2} = \frac{\pi}{6}, -\frac{\pi}{6}$
$\Rightarrow x = \pm\frac{\pi}{3}$

$2cos^2x = cosx, -180 \leq x \leq 180$ $\quad x = \pm 60, \pm 90$

$cos^2x - cosx - 2 = 0, 0 \leq x \leq 2\pi$ $\quad x = \pi$

Extension…

$3sinx = \sqrt{3}cosx, 0 \leq x \leq 360$ $\quad x = 30, 210$

Trig Identity Questions – Find the General Solutions

$$sinx = \frac{\sqrt{2}}{2}$$

$$tanx = 1,$$

$$sin2\theta = \frac{\sqrt{3}}{2}$$

$$cos\left(\frac{1}{2}x\right) = \frac{\sqrt{3}}{2}$$

$$2cos^2x = cosx$$

$$cos^2x - cosx - 2 = 0$$

$$3sinx = \sqrt{3}cosx$$