

331: 1, 4, 6, 7, 11, 12

1. $5 \sin x + 2 = \sin x$ on $[0, 2\pi)$, $\sin x = \frac{11\pi}{6}, \frac{7\pi}{6}$
 $4 \sin x = -2$
 $\sin x = -\frac{1}{2}$ $p = 2\pi$

on $(-\infty, \infty)$, $x = \frac{7\pi}{6} + 2\pi n$ and $x = \frac{11\pi}{6} + 2\pi n$

4. $4 \tan x - 7 = 3 \tan x - 6$ on $[0, \pi)$, $\tan x = 1$
 $+7 - 3 \tan x$

$\tan x = 1$
 ~~$x = \frac{\pi}{4}$~~ $x = \frac{\pi}{4}$

for all x , ~~$x = \frac{\pi}{4} + \pi n$~~
 $x = \frac{\pi}{4} + \pi n$

6. $2 - 10 \sec x = 4 - 9 \sec x$ on $[0, 2\pi)$ $\sec x = -2$
 -2 $+9 \sec x$

$-\sec x = 2$
 $\sec x = -2$
($\cos x = -\frac{1}{2}$)

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

on $(-\infty, \infty)$, $x = \frac{2\pi}{3} + 2\pi n$

and $x = \frac{4\pi}{3} + 2\pi n$

7. $3 \csc x = 2 \csc x + \sqrt{2}$ on $[0, 2\pi)$, $\csc x = \sqrt{2}$

$\csc x = \sqrt{2}$
($\sin x = \frac{\sqrt{2}}{2}$)

$x = \frac{\pi}{4}, \frac{3\pi}{4}$

on $(-\infty, \infty)$ $x = \frac{\pi}{4} + 2\pi n$, $x = \frac{3\pi}{4} + 2\pi n$

11. $7 \cot x - \sqrt{3} = 4 \cot x$ on $[0, \pi)$ ~~$\cot x = \frac{\sqrt{3}}{3}$~~

$3 \cot x = \sqrt{3}$
 $\cot x = \frac{\sqrt{3}}{3}$

($\tan x = \sqrt{3}$)

$\cot x = \frac{\sqrt{3}}{3}$, $x = \frac{\pi}{3}$

for all x , $x = \frac{\pi}{3} + \pi n$

$$\begin{aligned} 12. \quad 7 \cos x &= 5 \cos x + \sqrt{3} \\ 2 \cos x &= \sqrt{3} \\ \cos x &= \frac{\sqrt{3}}{2} \end{aligned}$$

$$\text{on } [0, 2\pi) \quad x = \frac{\pi}{6}, \frac{11\pi}{6}$$

$$\begin{aligned} &\text{on } (-\infty, \infty), \\ &x = \frac{\pi}{6} + 2\pi n, \frac{11\pi}{6} + 2\pi n \end{aligned}$$