

Create 6 with 3 identical digits Puzzle

Use any
symbols

(Solution) No #'s

make the three #'s equal six.

$$(1+1+1)! = 6 \checkmark$$

$$4+4-\sqrt{4} = 6 \checkmark$$

$$7-(7\div 7) = 6 \checkmark$$

$$2+2+2 = 6 \checkmark$$

$$5\div 5+5 = 6 \checkmark$$

$$8-\sqrt{\sqrt{8+8}} = 6 \checkmark$$

$$3\cdot 3-3 = 6 \checkmark$$

$$6+6-6 = 6 \checkmark$$

$$\sqrt{9\cdot 9}-\sqrt{9} = 6 \checkmark$$

$$\textcircled{1} \quad \underline{\tan^2 x} + \underline{\tan x} = 0$$

Factor out
GCF
($\tan x$)

$$\underline{\tan x} (\underline{\tan x + 1}) = 0$$

$$\tan x = 0$$

$$x = 0$$

$$x = \pi$$

$$\tan x + 1 = 0$$

$$\tan x = -1$$

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

$$x = \frac{7\pi}{4}$$

$$\textcircled{2} \quad \sin^2 x = \sin x$$

$$\sin^2 x - \sin x = 0$$

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

Factor out
GCF ($\sin x$)

$$\sin x = 0$$

$$x = 0$$

$$x = \pi$$

$$\sin x - 1 = 0$$

$$\sin x = 1$$

$$x = \frac{\pi}{2}$$

$$3) \sin^2 x - 5 \sin x = -6$$

$$\sin^2 x - 5 \sin x + 6 = 0$$
$$(\sin x - 2)(\sin x - 3) = 0$$

$$\sin x - 2 = 0$$

$$\sin x = 2$$

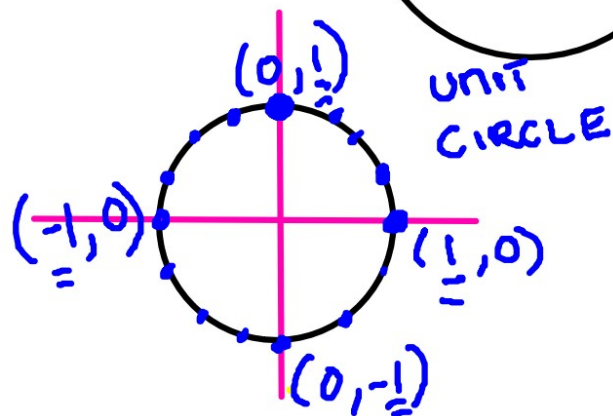
$\sin x$ must be
between -1 & 1

$$\sin x - 3 = 0$$

$$\sin x = 3$$

*Factor ^{ADD}
 $x^2 - 5x + 6$
 $(x-2)(x-3)$ ^{MV}

NO SOLUTION



④

$$\cot^2 x + 3 \cot x = 4$$

$$\cot^2 x + 3 \cot x - 4 = 0$$

Factor $x^2 + 3x - 4$

$$(\cot x + 4)(\cot x - 1) = 0$$

$$(x + 4)(x - 1)$$

$$\cot x + 4 = 0$$

- 4 - 4

$$\cot x - 1 = 0$$

$x^2 = .245$

$$\cot x = -4$$
$$\tan x = \frac{-1}{4}$$
$$x = \tan^{-1}\left(\frac{-1}{4}\right)$$

use calculator - 0.255

$$\cot x = 1$$
$$\tan x = 1$$

$$x = \frac{\pi}{4}$$
$$x = \frac{5\pi}{4}$$



$$\textcircled{5} \quad 2 \tan^2 x \sin x = \tan^2 x$$

$$2 \tan^2 x \sin x - \tan^2 x = 0$$

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

$$\sqrt{\tan^2 x} = \sqrt{0}$$

$$\tan x = 0$$

$$x = 0$$

$$x = \pi$$

$$2 \sin x - 1 = 0$$

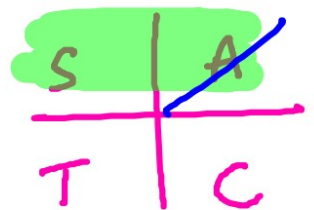
$$2 \sin x = 1$$

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

$$x = \frac{\pi}{6}$$

$$x = \frac{5\pi}{6}$$

GCF
is
 $\tan^2 x$



$$\textcircled{6} \quad 4 \cos^2 x - 1 = 0$$

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

$$2 \cos x + 1 = 0$$

$$2 \cos x = -1$$

$$\cos x = -\frac{1}{2}$$

$$2 \cos x - 1 = 0$$

$$2 \cos x = 1$$

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

$$4 \cos^2 x = 1$$

$$\cos^2 x = \frac{1}{4}$$

$$\sqrt{\cos^2 x} = \sqrt{\frac{1}{4}}$$

$$\cos x = \pm \frac{1}{2}$$

$$x = \frac{\pi}{3}, \frac{2\pi}{3}, \frac{4\pi}{3}, \frac{5\pi}{3}$$