

Trigonometry Worksheet: Trigonometric Equations (1)

Solve the trigonometric equation given by

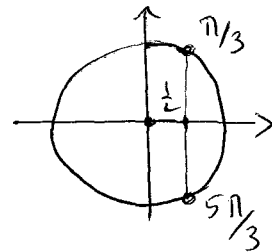
$$2 \cos x - 1 = 0$$

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

In the interval  $[0, 2\pi)$  the equation

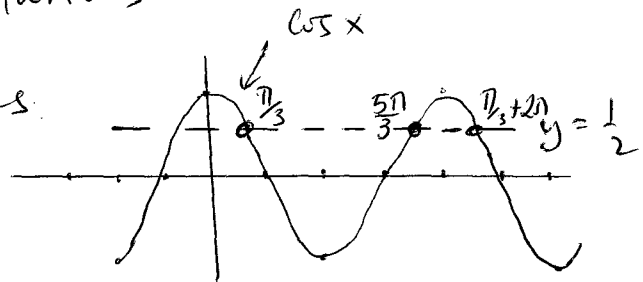
$\cos x = \frac{1}{2}$  has solutions  $x = \frac{\pi}{3}$  and  $x = \frac{5\pi}{3}$

(see unit circle on the right).



Also since  $\cos x$  has a period of  $2\pi$ , there are an infinitely many other solutions

that may be written as:



follows:

$$x = \frac{\pi}{3} + 2k\pi \quad \text{and} \quad x = \frac{5\pi}{3} + 2k\pi$$

where  $k$  is an integer.