$$2\cos^2\theta + 3\cos\theta - 2 = 0$$

replace : $x := \cos\theta$

$\Downarrow$

$$2x^2 + 3x - 2 = 0$$

factorize - square method

$2x$ ⊖ $1 \rightarrow x$

x ⊕ $2 \rightarrow 4x$

} can combine $4x - x = 3x$

⊕ ⊖

Attempt: $(2x-1)(x+2)$

verify $2x^2 + 4x - x - 2$

$2x^2 + 3x - 2$ ✓

Thus $2x^2 + 3x - 2 = 0$

becomes $(2x-1)(x+2) = 0$

$\boxed{\begin{array}{l}\text{when } a \times b = \emptyset \\ \text{there are two solutions;} \\ \quad a = \emptyset \\ \text{and } b = \emptyset \\ \text{both provide a } \emptyset \text{ result} \\ \text{to the equation.}\end{array}}$

solutions: I) $2x - 1 = 0$

$2x = 1$

$x = 1/2$

II) $x + 2 = 0$

II) $x+2=0$

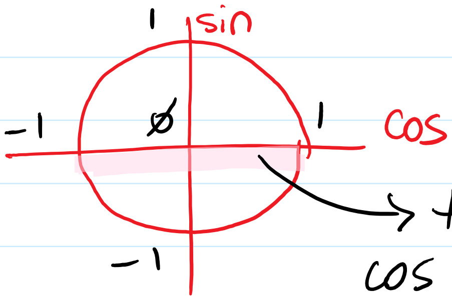
$x=-2$

Restore x, it was

$x := \cos\theta$

now we can say $\boxed{\cos\theta = \text{either } \frac{1}{2} \text{ or } \underbrace{-2}_{}}$.

not a trigonometrical solution, we can discard it, no angle can $\cos\theta = -2$



the range of cos is defined in $[-1, 1]$

The only solution then remains:

$$\boxed{\cos\theta = \frac{1}{2}}$$

inverse it, to find the angle

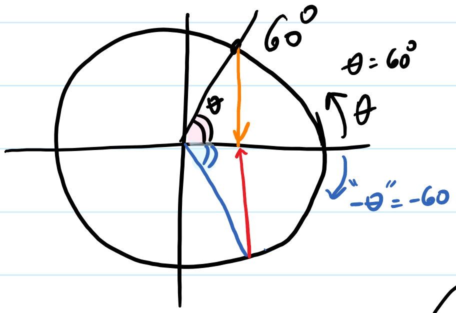
$$\cos^{-1}\left(\frac{1}{2}\right) = \theta$$

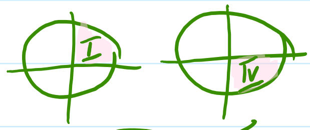
use your calculator:

$$\Downarrow$$

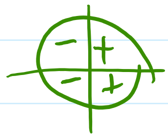
$$\boxed{\theta = 60^\circ}$$

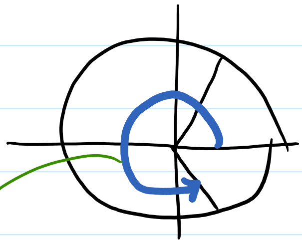
what matching angles have the same cos (or x) values?





cos is positive in these quadrants & it's negative in the others:





the no-negative, proper rotation angle is

$360° - 60 = 300°$.

Thus there are 2 solutions to the given equation for one rotation: $0 \le \theta \le 360°$

$\{60°, 300°\}$