Solve the given equation on the interval $[0,2\pi)$.
(Factoring)

$$2\cos^2\theta + \cos\theta - 1 = 0$$

Pretend / Let $X = \cos\theta$.

This makes the problem easier to see.

$$2x^2 + x - 1 = 0$$

$-2x^2$

$2x$ $-1x$

x

	$2x$	-1
1	$2x$	-1
x	$2x^2$	$-1x$

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

$2x - 1 = 0$
$+1 \quad +1$
$2x = 1$
$\frac{2x}{2} = \frac{1}{2}$
$\underline{\underline{x = \frac{1}{2}}}$
$\cos\theta = \frac{1}{2}$

$x + 1 = 0$
$-1 \quad -1$
$\underline{\underline{x = -1}}$
$\cos\theta = -1$

$\theta = \left\{\frac{\pi}{3}, \pi, \frac{5\pi}{3}\right\}$

Solve the given equation on the interval $[0,2\pi)$.
(Identities)

$$\sin^2\theta = 2\cos\theta + 2$$

$1 - \cos^2\theta = 2\cos\theta + 2$
$+\cos^2\theta \qquad +\cos^2\theta$

$1 = \cos^2\theta + 2\cos\theta + 2$
$-1 \qquad -1$

$0 = \cos^2\theta + 2\cos\theta + 1$

$0 = x^2 + 2x + 1$

$0 = (x+1)(x+1)$

$x = -1 \qquad x = -1$

$\cos\theta = -1$

$\theta = \{\pi\}$

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