$$\cos^2(x)+\cos^2\left(x+\frac{2\pi}{3}\right)+\cos^2\left(x-\frac{2\pi}{3}\right)=$$

$$=\cos^2 x+\frac{1+\cos\left(2x+\frac{4\pi}{3}\right)+\cos\left(2x-\frac{4\pi}{3}\right)+1}{2}=$$

$$=1+\cos^2 x+\cos(2x)\cos\left(\frac{4\pi}{3}\right)=1+\frac{1+\cos 2x}{2}-\frac{\cos 2x}{2}=\frac{3}{2}$$

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