

$$\begin{aligned}
&\cos(4v) + \cos(2v) + 1 = 0 \\
&\Leftrightarrow 2\cos^2(2v) - 1 + \cos(2v) + 1 = 0 \\
&\Leftrightarrow 2\cos^2(2v) + \cos(2v) \Leftrightarrow \cos(2v)(2\cos(2v) + 1) = 0 \\
&\Leftrightarrow \cos(2v) = 0, \cos(2v) = \frac{-1}{2}
\end{aligned}$$

b)

$$\cos(2v) = 0 \Leftrightarrow 2v = \frac{\pm\pi}{2} + 2\pi n \Leftrightarrow v = \frac{\pm\pi}{4} + \pi n$$

$$\cos(2v) = \frac{-1}{2} \Leftrightarrow v = \frac{\pm\pi}{3} + \pi n$$

$$n \in \mathbb{Z}$$