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$$\begin{aligned} & \frac{d}{d\theta} (\cos^2(\theta^4)) \\ &= \frac{d(\cos^2(\theta^4))}{d(\cos(\theta^4))} \times \frac{d(\cos(\theta^4))}{d\theta^4} \times \frac{d\theta^4}{d\theta} \end{aligned}$$

$$= 2 \cos(\theta^4) \times (-\sin(\theta^4)) \times 4\theta^3$$

$$= -8\theta^3 \sin \theta^4 \cos \theta^4 \theta^3$$

$$= -4\theta^3 (\sin(\theta^4 + \theta^4)) \theta^3$$

$$= -4\theta^3 \sin(2\theta^4)$$

$$-4\theta^3 \sin(2\theta^4) = 0$$

$$\Rightarrow \sin(2\theta^4) = 0, \quad \begin{aligned} \theta^3 &= 0 \\ \theta &= 0 \end{aligned}$$

$$2\theta^4 = \pi$$

$$\theta^4 = \frac{\pi}{2}$$

$$\theta = \frac{\pm\sqrt[4]{8\pi}}{2}$$

$$\therefore \theta = 0, \frac{\pm\sqrt[4]{8\pi}}{2}$$