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$$\frac{d}{d\theta}\left(\cos^2(\theta^4)\right)$$

$$= \frac{d\left(\cos^2(\theta^4)\right)}{d\left(\cos(\theta^4)\right)} \times \frac{d\left(\cos(\theta^4)\right)}{d\theta^4} \times \frac{d\theta^4}{d\theta}$$

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

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

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

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

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

$$\Rightarrow \sin(2\theta^4) = 0 \quad , \quad \theta^3 = 0$$

$$\theta = 0$$

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

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

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

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