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(114)

$$\lim_{x \to \frac{\pi}{4}} \frac{1-\sin 2x}{4\cos^4 x - 3\cos^2 x + \sin^2 x} = \lim_{x \to \frac{\pi}{4}} \frac{1-\sin 2x}{4\cos^4 x - 3\cos^2 x + 1 - \cos^2 x}$$

$$= \lim_{x \to \frac{\pi}{4}} \frac{1-\sin 2x}{4\cos^4 x - 4\cos^2 x + 1} = \lim_{x \to \frac{\pi}{4}} \frac{1-\sin 2x}{(2\cos^2 x - 1)^2} =$$

$$= \lim_{x \to \frac{\pi}{4}} \frac{1-\sin 2x}{\cos^2 2x} = \lim_{x \to \frac{\pi}{4}} \frac{1-\sin 2x}{\frac{1+\cos 4x}{2}} = \lim_{x \to \frac{\pi}{4}} \frac{2(1-\sin 2x)}{1+1-2\sin^2 2x} = \lim_{x \to \frac{\pi}{4}} \frac{2(1-\sin 2x)}{2-2\sin^2 2x} =$$

$$= \lim_{x \to \frac{\pi}{4}} \frac{2(1-\sin 2x)}{2(1-\sin^2 2x)} =$$

$$= \lim_{x \to \frac{\pi}{4}} \frac{\cancel{2(1-\sin 2x)}}{\cancel{2(1-\sin 2x)}(1+\sin 2x)} = \lim_{x \to \frac{\pi}{4}} \frac{1}{1+\sin 2x} = \frac{1}{1+1} = \frac{1}{2}$$