

$$\int \frac{dx}{x^4 + 1}.$$

$$\frac{1}{x^4 + 1} = \frac{1}{(x^2 - \sqrt{2}x + 1)(x^2 + \sqrt{2}x + 1)} = \frac{1}{4} \cdot \frac{-\sqrt{2}x + 2}{x^2 - \sqrt{2}x + 1} + \frac{1}{4} \cdot \frac{\sqrt{2}x + 2}{x^2 + \sqrt{2}x + 1}$$

$$\int \frac{dx}{x^4 + 1} = \frac{-1}{2} \int \frac{\sqrt{2}x - 2}{(\sqrt{2}x - 1)^2 + 1} dx + \frac{1}{2} \int \frac{\sqrt{2}x + 2}{(\sqrt{2}x + 1)^2 + 1} dx = \frac{-\sqrt{2}}{4} \int \frac{u - 1}{u^2 + 1} du + \frac{\sqrt{2}}{4} \int \frac{v + 1}{v^2 + 1} dv =$$

$$= \left[ \frac{-\sqrt{2}}{8} \log[(\sqrt{2}x - 1)^2 + 1] + \frac{\sqrt{2}}{8} \log[(\sqrt{2}x + 1)^2 + 1] + \frac{\sqrt{2}}{4} \arctan(\sqrt{2}x - 1) + \frac{\sqrt{2}}{4} \arctan(\sqrt{2}x + 1) + c \right]$$


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