

Solution of Quiz 02

Set

$$F(x) = \int_0^x \cos(t^2) dt$$

From the Fundamental Theorem of Calculus, we know that $F(x)$ is an antiderivative of $\cos(t^2)$. Then we have

$$\int_0^{x^2} \cos(t^2) dt = F(x^2)$$

The Chain Rule then implies that :

$$\frac{d}{dx} \int_0^{x^2} \cos(t^2) dt = 2x F'(x^2) = 2x \cos x^4$$

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