Find the ∫tan^3xsec^3xdx

tan^2x+1
cot^2x+1
sec^2x+1
sec^2x

Solution:

$$\int tan^3x * sec^3x \, dx = \int \frac{sin^3x}{cos^3x} * \frac{1}{cos^3x} \, dx =$$

$$= -\int \frac{sin^2x}{cos^6x} \, d\cos x = \int \frac{cos^2x - 1}{cos^6x} \, d\cos x = \int \left(\frac{1}{cos^4x} - \frac{1}{cos^6x} \right) d\cos x =$$

$$= \frac{1}{5 * cos^5x} - \frac{1}{3 * cos^3x} + C$$

where C is an arbitrary constant.

Answer:

$$\int tan^3x * sec^3x \, dx = \frac{1}{5 * cos^5x} - \frac{1}{3 * cos^3x} + C$$

P. S.: maybe you make some mistake in task ∫tan^3xsec^3xdx.