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Find:

$$\Omega = \int \frac{tan^2x \cdot tan^4x \cdot tan^6x \cdot tan^8x \cdot \ldots \cdot tan^{2n}x}{sin^2x\sqrt{1-tan^{n^2+n+1}x} - \sqrt{1-tan^{n^2+n+1}x} - cos^2x\sqrt{1-tan^{n^2+n+1}x}}dx$$

Proposed by Vural Ozap-Turkey

Solution by Daniel Sitaru-Romania

$$\Omega = \int \frac{tan^{2\cdot\frac{n(n+1)}{2}}}{-2cos^2x\sqrt{1-tan^{n^2+n+1}x}}dx = \int \frac{(tanx)'tan^{n^2+n}x}{-2\sqrt{1-tan^{n^2+n+1}x}}dx =$$

$$= \frac{1}{n^2+n+1}\int \frac{\left(1-tan^{n^2+n+1}x\right)'}{2\sqrt{1-tan^{n^2+n+1}x}}dx = \frac{1}{n^2+n+1}\sqrt{1-tan^{n^2+n+1}x} + C$$