Show that

$$\frac{\sqrt{1-cot^2x} * \sqrt{tan^2x}}{cosx} = tan2x$$

Solution:

$$\frac{\sqrt{1-cot^2x} * \sqrt{tan^2x}}{cosx} = \frac{\sqrt{\left(1-\left(\frac{cosx}{sinx}\right)^2\right) * \frac{sin^2x}{cos^2x}}}{cosx} = \frac{\sqrt{\left(\frac{sin^2x - cos^2x}{sin^2x}\right) * \frac{sin^2x}{cos^2x}}}{cosx}$$
$$= \frac{\sqrt{sin^2x - cos^2x}}{cos^2x} \neq tan2x$$

For example take 60°

$$tan60° = \sqrt{3}$$

$$cot60° = \frac{1}{\sqrt{3}}$$

$$tan120° = -\sqrt{3}$$

$$cos60° = \frac{1}{2}$$

$$\frac{\sqrt{1-cot^2x} * \sqrt{tan^2x}}{cosx} = \frac{\sqrt{1-\frac{1}{3}}\sqrt{3}}{2} = \frac{\sqrt{2}}{2}$$

$$tan2x = \ tan120° = -\sqrt{3}$$

$$\frac{\sqrt{2}}{2} \neq -\sqrt{3}$$