TRYGONOMETRIA:

Wykaż że:

$$\left(\frac{1}{\sin\alpha} + \frac{1}{\cos\alpha}\right)(\sin\alpha + \cos\alpha) = 2 + \frac{1}{\sin\alpha\cos\alpha}$$

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$$\left(\frac{1}{\sin\alpha} + \frac{1}{\cos\alpha}\right)(\sin\alpha + \cos\alpha) = 2 + \frac{1}{\sin\alpha\cos\alpha}$$

$$\frac{1}{\sin\alpha}\sin\alpha + \frac{1}{\sin\alpha}\cos\alpha + \frac{1}{\cos\alpha}\sin\alpha + \frac{1}{\cos\alpha}\cos\alpha = 2 + \frac{1}{\sin\alpha\cos\alpha}$$

$$1 + \frac{\cos\alpha}{\sin\alpha} + \frac{\sin\alpha}{\cos\alpha} + 1 = 2 + \frac{1}{\sin\alpha\cos\alpha}$$

$$2 + \frac{\cos\alpha}{\sin\alpha} + \frac{\sin\alpha}{\cos\alpha} - 2 = \frac{1}{\sin\alpha\cos\alpha}$$

$$\frac{\cos\alpha}{\sin\alpha} + \frac{\sin\alpha}{\cos\alpha} = \frac{1}{\sin\alpha\cos\alpha}$$

$$\frac{\cos\alpha\cos\alpha}{\sin\alpha\cos\alpha} + \frac{\sin\alpha\sin\alpha}{\sin\alpha\cos\alpha} = \frac{1}{\sin\alpha\cos\alpha}$$

$$\frac{\cos^2\alpha + \sin^2\alpha}{\sin\alpha\cos\alpha} = \frac{1}{\sin\alpha\cos\alpha}$$

Dalsza część dowodu:

$$\frac{1}{\sin\alpha\cos\alpha} = \frac{1}{\sin\alpha\cos\alpha}$$

$$\frac{1}{\sin\alpha\cos\alpha} - \frac{1}{\sin\alpha\cos\alpha} = 0$$

$$0 = 0$$

Jest to prawda, czyli tożsamość trygonometryczna jest prawdziwa