

Conditions

prove

$$\sin D = 2 \tan(D/2) / (1 + \tan^2(D/2))$$

Solution

$$\frac{2 \tan(D/2)}{1 + \tan^2(D/2)} = \frac{2 \frac{\sin(D/2)}{\cos(D/2)}}{1 + \frac{\sin^2(D/2)}{\cos^2(D/2)}} = \frac{2 \frac{\sin(D/2)}{\cos(D/2)}}{\cos^2(D/2) + \sin^2(D/2)} \cos^2(D/2) =$$

$$= \frac{2 \frac{\sin(D/2)}{\cos(D/2)} \cos^2(D/2)}{1} = 2 \sin(D/2) \cos(D/2) = \sin(D)$$

Q.E.D.