LÖSUNG ZU 774ef:

Trigonometrische Grundbeziehungen:

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

e)

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

f)

$$\frac{1}{\sqrt{1+\tan^2(\alpha)}} = \frac{1}{\sqrt{1+\frac{\sin^2(\alpha)}{\cos^2(\alpha)}}} = \frac{1}{\sqrt{\frac{\cos^2(\alpha)}{\cos^2(\alpha)}+\frac{\sin^2(\alpha)}{\cos^2(\alpha)}}} = \frac{1}{\sqrt{\frac{\cos^2(\alpha)+\sin^2(\alpha)}{\cos^2(\alpha)}}} = \frac{1}{\sqrt{\frac{1}{\cos^2(\alpha)}}} = \frac{1}{\frac{1}{\cos(\alpha)}} = \cos(\alpha)$$