

PROBLEMAS DE TRIGONOMETRÍA

Problema 172:

Simplificar la expresión siguiente:

$$\frac{\operatorname{tg}(45^\circ + a) - 1}{\operatorname{tg} 2a}$$

Solución Problema 172:

$$\frac{\operatorname{tg}(45^\circ + a) - 1}{\operatorname{tg} 2a} = \frac{\frac{\operatorname{tg} 45^\circ + \operatorname{tg} a}{1 - \operatorname{tg} 45^\circ \cdot \operatorname{tg} a} - 1}{\frac{2\operatorname{tg} a}{1 - \operatorname{tg}^2 a}} = \frac{\frac{1 + \operatorname{tg} a}{1 - 1 \cdot \operatorname{tg} a} - 1}{\frac{2\operatorname{tg} a}{1 - \operatorname{tg}^2 a}} = \frac{\frac{1 + \operatorname{tg} a}{1 - \operatorname{tg} a} - 1}{\frac{2\operatorname{tg} a}{1 - \operatorname{tg}^2 a}} = \frac{\frac{1 + \operatorname{tg} a - (1 - \operatorname{tg} a)}{1 - \operatorname{tg} a}}{\frac{2\operatorname{tg} a}{1 - \operatorname{tg}^2 a}} =$$

$$= \frac{\frac{1 + \operatorname{tg} a - 1 + \operatorname{tg} a}{1 - \operatorname{tg} a}}{\frac{2\operatorname{tg} a}{1 - \operatorname{tg}^2 a}} = \frac{\frac{2\operatorname{tg} a}{1 - \operatorname{tg} a}}{\frac{2\operatorname{tg} a}{1 - \operatorname{tg}^2 a}} = \frac{1 - \operatorname{tg}^2 a}{1 - \operatorname{tg} a} = \frac{(1 + \operatorname{tg} a)(1 - \operatorname{tg} a)}{1 - \operatorname{tg} a} = 1 + \operatorname{tg} a$$