

$$\begin{aligned} \textcircled{19} \quad \sin(15^\circ) &= \sin(45^\circ - 30^\circ) = \sin 45^\circ \cos 30^\circ - \cos 45^\circ \sin 30^\circ = \\ &= \frac{\sqrt{2}}{2} \frac{\sqrt{3}}{2} - \frac{\sqrt{2}}{2} \frac{1}{2} = \frac{\sqrt{2}}{4} (\sqrt{3} - 1) = \\ &= \frac{\sqrt{3} - 1}{2\sqrt{2}} \approx 0,26. \end{aligned}$$

El $\cos 15$ calculat després del $\textcircled{20}$

$$\textcircled{20} \quad a) \quad \sin b \cdot \cos(a-b) + \cos b \cdot \sin(a-b) = \sin a$$

$$\boxed{\sin b \cdot \cos(a-b) + \cos b \sin(a-b) =}$$

fórmula del
sin i cos d'una diferència

$$= \sin b [\cos a \cos b + \sin a \sin b] + \cos b [\sin a \cos b - \cos a \sin b] =$$

$$= \sin b \cos a \cos b + \sin a \sin^2 b + \cos^2 b \sin a - \cos b \cos a \sin b =$$

$$= \sin a \sin^2 b + \sin a \cos^2 b = \sin a (\underbrace{\sin^2 b + \cos^2 b}_1) = \boxed{\sin a}$$

$$b) \quad \cotg(a+b) = \frac{\cotg a \cotg b - 1}{\cotg a + \cotg b}$$

~~$$\cotg(a+b) = \frac{\cotg a \cotg b - 1}{\cotg a + \cotg b}$$~~

$$\boxed{\cotg(a+b) = \frac{1}{\text{tg}(a+b)} = \frac{1 - \text{tg} a \text{tg} b}{\text{tg} a + \text{tg} b} =}$$

fórmula de la tg
d'una suma

$$\begin{aligned} &= \frac{1 - \frac{1}{\cotg a} \frac{1}{\cotg b}}{\frac{1}{\cotg a} + \frac{1}{\cotg b}} = \frac{\cotg a \cotg b - 1}{\cotg a \cotg b} = \\ &= \frac{\cotg a \cotg b - 1}{\cotg a \cotg b} \end{aligned}$$

$$= \boxed{\frac{\cotg a \cotg b - 1}{\cotg a \cotg b}}$$