

1)

Tem-se que:

$$f(x) = \frac{1 + \sin x + \cos x}{\cos x}, \quad x \in \left] 0, \frac{\pi}{2} \right[$$

Seja $\alpha \in \left] 0, \frac{\pi}{2} \right[$ tal que $\cos\left(\frac{\pi}{2} + \alpha\right) = -\frac{3}{5}$

Determine o valor de $f(\alpha)$.

2)

Determine k , sabendo que:

2.1) $x \in \left] -\frac{\pi}{4}, \frac{\pi}{4} \right[\wedge \tan x = 2 - k$

2.2) $x \in \left] 0, \frac{\pi}{2} \right[\wedge \sin\left(\frac{\pi}{2} - x\right) + \cos x = 1 - k$

3)

Sabe-se que $\tan(\pi - x) = 3 \wedge x \in 2.^\circ$ quadrante

Calcule:

$$\sin\left(\frac{\pi}{2} - x\right) - 2 \cos^2(x - 3\pi)$$