1880450

1.1) $\sin 765° = \sin(2\cdot 360° + 45°) = \sin 45° = \frac{\sqrt{2}}{2}$

2) $\cos\frac{19\pi}{6} = \cos 3\frac{5\pi}{6} = -\cos\frac{\pi}{6} = -\frac{\sqrt{3}}{2}$

2. $\sin\alpha = 0{,}3 \quad -\frac{7\pi}{2} < \alpha < -\frac{5\pi}{2} \Rightarrow 4\pi - \frac{7\pi}{2} < \alpha < 4\pi - \frac{5\pi}{2} \Rightarrow$

$\Rightarrow \frac{\pi}{2} < \alpha < \frac{3\pi}{2}$ При этих значениях α функция $\cos\alpha$ принимает отрицательные значения

$\cos(\arcsin x) = \sqrt{1-x^2}$

$\cos\alpha = -\sqrt{1-0{,}09} = -\sqrt{0{,}81} = -0{,}9$

3.1) $\cos(\alpha-\beta) - \cos(\alpha+\beta) = 2\sin\frac{\alpha-\beta+\alpha+\beta}{2}\cdot\sin\frac{\alpha+\beta-\alpha+\beta}{2} =$

$= 2\sin\alpha\sin\beta$

2) $\dfrac{\cos(\frac{3\pi}{2}-\alpha) + \cos(\pi+\alpha)}{2\sin(\alpha-\frac{\pi}{2})\cos(-\alpha)+1} = \dfrac{-\sin\alpha - \cos\alpha}{-2\cos\alpha\cdot\cos\alpha+1} = -\dfrac{\sin\alpha+\cos\alpha}{2\cos^2\alpha-1} =$

$= -\dfrac{\sin\alpha+\cos\alpha}{\cos 2\alpha}$

4.1) $2\sin\frac{x}{2} = 1-\cos x$

$2\sin\frac{x}{2} = 2\sin^2\frac{x}{2} \Rightarrow \sin^2\frac{x}{2} - \sin\frac{x}{2} = 0 \Rightarrow \sin\frac{x}{2}(\sin\frac{x}{2}-1)=0$

$\sin\frac{x_1}{2} = 0 \quad \frac{x_1}{2} = \pi k \quad x_1 = 2\pi k \quad k\in Z$

$\sin\frac{x_2}{2} = 1 \quad \frac{x_2}{2} = \frac{\pi}{2} + 2\pi n \quad x_2 = \pi + 4\pi n \quad n\in Z$

2) $\cos(\frac{3\pi}{2}+x)\cos 3x - \cos(\pi - x)\sin 3x = -1$

$\sin x\cos 3x + \cos x\sin 3x = -1$

$\frac{1}{2}(\sin 4x + \sin(-2x)) + \frac{1}{2}(\sin 4x + \sin 2x) = -1$

$\sin 4x - \sin 2x + \sin 4x + \sin 2x = -2$

$2\sin 4x = -2 \Rightarrow \sin 4x = -1 \Rightarrow 4x = -\frac{\pi}{2} + 2\pi k \Rightarrow$

$x = -\frac{\pi}{8} + \frac{\pi}{2}k \quad k\in Z$

5. $(tg\alpha + ctg\alpha)(1-\cos 4\alpha) = 4\sin 2\alpha;$

$\left(\frac{\sin\alpha}{\cos\alpha} + \frac{\cos\alpha}{\sin\alpha}\right)2\sin^2 2\alpha = 4\sin 2\alpha;$

$2\frac{\sin^2\alpha+\cos^2\alpha}{\cos\alpha\cdot\sin\alpha}\sin^2 2\alpha = 4\sin 2\alpha;$

$\frac{4\sin^2 2\alpha}{\sin 2\alpha} = 4\sin 2\alpha; \quad 4\sin 2\alpha = 4\sin 2\alpha$, что и треб.