031: $\sqrt{2}\cdot\sin\frac{7\pi}{8}\cdot\cos\frac{7\pi}{8} = \frac{2\cdot\sqrt{2}}{2}\cdot\sin\frac{7\pi}{8}\cdot\cos\frac{7\pi}{8} = \frac{\sqrt{2}}{2}\cdot\sin\left(2\cdot\frac{7\pi}{8}\right) = \frac{\sqrt{2}}{2}\sin\left(\frac{7\pi}{4}\right) =$

$\sin 2\alpha = 2\cos\alpha\sin\alpha$

$= \frac{\sqrt{2}}{2}\cdot\left(-\frac{\sqrt{2}}{2}\right) = -\frac{1}{2} = -0,5$

$\frac{7\pi}{4}$

$\sin<0$

по ф-ле сложения

043: $\sin 3\alpha\cos 2\alpha + \sin 2\alpha\cos 3\alpha = \sin 3\alpha\cos 2\alpha + \cos 3\alpha\cdot\sin 2\alpha =$
$= \sin(3\alpha+2\alpha) = \sin 5\alpha + \sin(\pi+5\alpha) = \sin 5\alpha - \sin 5\alpha = 0$

035: $\frac{15}{\underbrace{\sin^2 39+\cos^2 39}_{=1}+1} = \frac{15}{2} = 7,5$ $\quad \sin 129° = \cancel{\sin(180-...)}$
$\sin(90+39) = \cos 39$

048: $\frac{2}{\sin\frac{\pi}{4}\cos\alpha+\cos\frac{\pi}{4}\sin\alpha+3} = \frac{2}{\sin(\frac{\pi}{4}+\alpha)}$

Наибольшее будет знач-е, если знаменатель будет наименьшим, т.е. $\frac{\sqrt{2}}{2}(\cos\alpha+\sin\alpha)$ $\Rightarrow$
$[-1;1]$ $[-1;1]$

$\cos\alpha = \frac{\pi}{4}$ $\quad \cos\frac{\pi}{4} = \frac{\sqrt{2}}{2}$
$\cancel{\sin\alpha = \pi}$ $\quad \sin\frac{\pi}{4} = \frac{\sqrt{2}}{2}$

Ответ

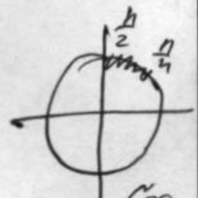
$\frac{\sqrt{2}}{2}(\cos\alpha+\sin\alpha) = \frac{\sqrt{2}}{2}\cdot\left(\frac{\sqrt{2}}{2}+\frac{\sqrt{2}}{2}\right) =$
$= \frac{\sqrt{2}\cdot 2\cdot\sqrt{2}}{2\cdot 2} = 1$

$\frac{2}{1+3} = \frac{2}{4} = \frac{1}{2} = 0,5$

044: $\cancel{\cos\alpha} \; \cos^2\frac{\alpha}{2} \; \cancel{\sin}$ $\qquad 2\cos\alpha = 1+\cos 2\alpha.$

$\cos^2\frac{\alpha}{2} = \frac{1+\cos\alpha}{2} = \frac{1-\frac{7}{25}}{2} = \frac{18}{25\cdot 2} = \frac{9}{25}.$ $\qquad \frac{\pi}{4} < \frac{\alpha}{2} < \frac{\pi}{2}$

$\cos\frac{\alpha}{2} = \sqrt{\frac{9}{25}} = \frac{3}{5} = 0,6$



$\cos>0$