$$\sin(\alpha+\beta) = \cos\left(\frac{\pi}{2}-(\alpha+\beta)\right) = \cos\left[\left(\frac{\pi}{2}-\alpha\right)-\beta\right]$$

$\boxed{\text{Es. } 89}$

$$\sin\left(\alpha+\frac{\pi}{4}\right)-\cos\left(\alpha+\frac{\pi}{4}\right) =$$

$$= \sin\alpha\cos\frac{\pi}{4} + \cancel{\cos\alpha\sin\frac{\pi}{4}} - \cancel{\cos\alpha\cos\frac{\pi}{4}} + \sin\alpha\sin\frac{\pi}{4} =$$

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

$$\cos 2\alpha = \cos(\alpha+\alpha) = \cos^2\alpha - \sin^2\alpha = 2\cos^2\alpha - 1 = 1 - 2\sin^2\alpha$$

$$\sin 2\alpha = \sin(\alpha+\alpha) = 2\cos\alpha \sin\alpha$$

$$\cos 2\alpha = 2\cos^2\alpha - 1 \qquad \beta = 2\alpha$$

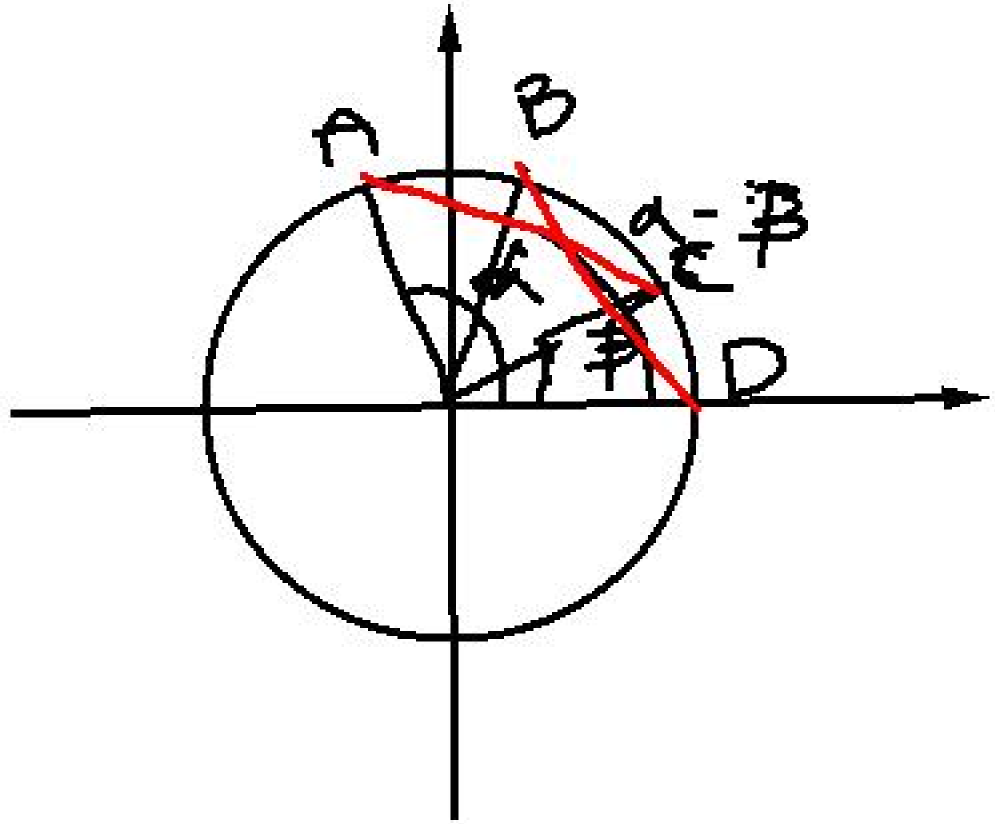
$$\alpha = \frac{\beta}{2}$$

$$\cos\beta = 2\cos^2\frac{\beta}{2} - 1$$

$$\cos^2\frac{\beta}{2} = \frac{1+\cos\beta}{2} \qquad \cos\frac{\beta}{2} = \begin{cases} +\sqrt{\dfrac{1+\cos\beta}{2}} & -\dfrac{\pi}{2} \le \dfrac{\beta}{2} \le \dfrac{\pi}{2} \\ -\sqrt{\dfrac{1+\cos\beta}{2}} & \dfrac{\pi}{2} \le \dfrac{\beta}{2} \le \dfrac{3\pi}{2} \end{cases}$$

$$\sin^2\frac{\beta}{2} = \frac{1-\cos\beta}{2} \qquad \sin\frac{\beta}{2} = \begin{cases} +\sqrt{\dfrac{1-\cos\beta}{2}} & 0 \le \dfrac{\beta}{2} \le \pi \\ -\sqrt{\dfrac{1-\cos\beta}{2}} & \pi \le \dfrac{\beta}{2} \le 2\pi \end{cases}$$

$$\cos(\alpha-\beta)=\cos\alpha\,\cos\beta+\operatorname{sen}\alpha\,\operatorname{sen}\beta$$



$A: \cos\alpha\,;\ \operatorname{sen}\alpha$

$C=\cos\beta\,;\ \operatorname{sen}\beta$

$B=\cos(\alpha-\beta)\,;\ \operatorname{sen}(\alpha-\beta)$

$D=(1;0)$

$$\overline{AC}^2=\overline{BD}^2$$

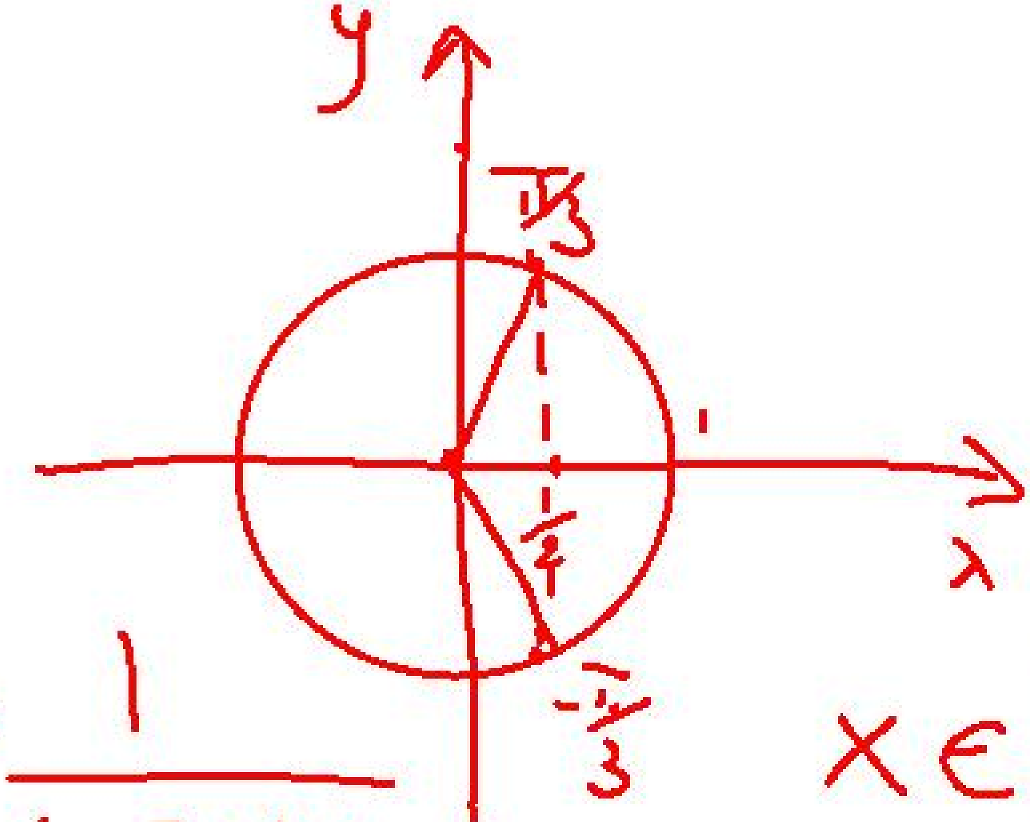
$$(\cos\alpha-\cos\beta)^2+(\operatorname{sen}\alpha-\operatorname{sen}\beta)^2$$

$$(1-\cos(\alpha-\beta))^2+(0-\operatorname{sen}(\alpha-\beta))^2$$

D: $1-2\cos x \neq 0$

$\cos x \neq \frac{1}{2}$

$x \neq \pm\frac{\pi}{3}$



$f(x) = \frac{1}{1-2\cos x}$ $\quad x \in \left[\frac{\pi}{2}, \frac{3}{2}\pi\right]$

MAX?

MIN?

$\cos\frac{\pi}{2} = 0$ $\quad -1 \leq \cos x \leq 0$

$\cos\frac{3}{2}\pi = 0$

$0 \leq -2\cos x \leq 2$ $\quad / \quad \frac{1}{3} \leq \frac{1}{1-2\cos x} \leq 1$