دوازدهم ریاضی 8 دختر　　　　　تکلیف شماره ۱۷

۱ جواب ②

$8\cos x - \tan^2 x = 1$

$8\cos x = \tan^2 x + 1 \quad 8\cos x = \frac{1}{\cos^2 x} \quad 8\cos^3 x = 1 \quad \cos^3 x = \frac{1}{8} \quad \cos x = \frac{1}{2}$

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$5\sin^2(x) + 2\cos(3x) = -2$

$5(1-\cos^2 x) + 2(4\cos^3 x - 3\cos x) + 2 = 0 \quad 8\cos^3 x - 5\cos^2 x - 6\cos x + 7 = 0$

$a + c = b + d$

$8\cos^3 x - 5\cos^2 x - 6\cos x + 7 = (\cos x + 1)(?) \quad ? = 8\cos^2 x - 13\cos x + 7$

$(\cos x + 1)(8\cos^2 x - 13\cos x + 7) = 0 \longrightarrow \cos x = -1 \quad \pi, -\pi$ جواب ②

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$2\sin x \cos 2x + \sin x = 1$

$2\sin x(1 - 2\sin^2 x) + \sin x = 1 \quad 3\sin x - 4\sin^3 x = 1 \quad \sin 3x = 1$

$3x = 2k\pi + \frac{\pi}{2}$

$3x = 2k\pi + \pi - \frac{\pi}{2}$?

$x = \frac{2k\pi}{3} + \frac{\pi}{6} \quad \frac{\pi}{6} + \frac{5\pi}{6} + \frac{9\pi}{6} = \frac{5\pi}{2}$

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$\frac{1}{\sin(\frac{\pi}{2}+2x)} + \frac{1}{\cos(\frac{\pi}{2}+4x)} = \frac{1}{\cos 2x} + \frac{1}{-\sin 4x} = 0 \Longrightarrow \cos 2x = \sin 4x$

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

$\longrightarrow 4x = 2k\pi + \frac{\pi}{2} - 2x$

$\longrightarrow 6x = 2k\pi + \frac{\pi}{2}$

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$m(\cos x - \sin x) - 3\sqrt{6}\sin 2x = \sqrt{6} \quad \cos(x + \frac{\pi}{4}) = \frac{1}{\sqrt{3}}$

$\cos(x + \frac{\pi}{4}) = \frac{\sqrt{2}}{2}(\cos x - \sin x) = \frac{\sqrt{3}}{3} \quad \cos x - \sin x = \frac{\sqrt{6}}{3}$

$(\cos x - \sin x)^2 = 1 - \sin 2x = (\frac{\sqrt{6}}{3})^2 \quad \sin 2x = \frac{1}{3}$

$\frac{\sqrt{6}}{3}m - 3\sqrt{6} \times \frac{1}{3} = \sqrt{6} \quad \frac{\sqrt{6}}{3}m - \sqrt{6} = \sqrt{6} \quad \frac{\sqrt{6}}{3}m = 2\sqrt{6} \quad (m = 6)$

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$\sin(x + \frac{\pi}{6})\cos(\frac{\pi}{3} - x) = 1$

$x + \frac{\pi}{6} + \frac{\pi}{3} - x = \frac{\pi}{2}$

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$\sin x + \sqrt{۳}\cos x = \sqrt{۲}$ $[-\pi, \pi]$

$\frac{۱}{۲}\sin x + \frac{\sqrt{۳}}{۲}\cos x = \frac{\sqrt{۲}}{۲}$ $\cos ۴۵ \sin x + \sin ۴۵ \cos x = \frac{\sqrt{۲}}{۲}$ $\sin(x + ۴۵) = \frac{\sqrt{۲}}{۲}$

$x + \frac{\pi}{۳} = ۲k\pi + \frac{\pi}{۴}$ $x = ۲k\pi - \frac{\pi}{۱۲}$ $\frac{۲۳\pi}{۱۲} - \frac{\pi}{۱۲} + \frac{۸\pi}{۱۲} = \frac{۹\pi}{۴}$

$x + \frac{\pi}{۳} = ۲k\pi + \pi - \frac{\pi}{۴}$ $x = ۲k\pi + \frac{۸\pi}{۱۲}$

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$۲\sin x \sin(\frac{۳\pi}{۲} - x) = ۱$ $-۲\sin x \cos x = ۱$ $-\sin ۲x = ۱$

$\sin ۲x = -\frac{۱}{۲}$ → $۲x = ۲k\pi - \frac{\pi}{۶}$ $x = k\pi - \frac{\pi}{۱۲}$

→ $۲x = ۲k\pi - \pi + \frac{\pi}{۶}$ $x = k\pi - \frac{۵\pi}{۱۲}$

$S = ۱$

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$(۱ + \cos(۲x))(۱ + \cos(۴x))(۱ + \cos(۸x)) = \frac{۱}{۸}$ $[۰, \pi]$

$(۲\cos^۲ x)(۲\cos^۲ ۲x)(۲\cos^۲ ۴x) = \frac{۱}{۸}$ $(\cos^۲ x)(\cos^۲ ۲x)(\cos^۲ ۴x) = \frac{۱}{۶۴}$

$\cos x \cdot \cos ۲x \cdot \cos ۴x = \frac{۱}{۸}$ $\times \frac{\sin x}{\sin x}$ $\frac{۱}{۸}\frac{\sin ۸x}{\sin x} = \frac{۱}{۸}$

$\sin ۸x = \sin x$

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$\tan x \tan ۳x = ۱$ $\tan ۲x = \cot x$ $\tan ۲x = \tan(\frac{\pi}{۲} - x)$

$۲x = k\pi + \frac{\pi}{۲} - x$ $x = \frac{k\pi}{۳} + \frac{\pi}{۶}$

$\frac{۹\pi}{۶} + \frac{۱۱\pi}{۶} + \frac{۱۳\pi}{۶} + \frac{۱۵\pi}{۶} = \frac{۴۸\pi}{۶} = ۸\pi$