APOTEMİ TRİGONOMETRİ MARATON TEST 2

1) $\sin\frac{\pi}{4}\cdot\cos x + \cos\frac{\pi}{4}\cdot\sin x = \frac{\sqrt2}{2}(S_x + C_x)$ payı

$-\cos x - \sin x = -(\sin x + \cos x)$ payda $\quad -\frac{\sqrt2}{2}$

2) $\frac{3\pi}{8} + \frac{\pi}{8} = \frac{4\pi}{8} = \frac{\pi}{2}$ $\qquad \sin^2\frac{3\pi}{8} = \cos^2\frac{\pi}{8}$

$\alpha + \beta = 90°$

$2\cdot\cos^2\frac{\pi}{8} - 1 + 1 = \cos\frac{2\pi}{8} + 1 = \cos\frac{\pi}{4} + 1 = \frac{\sqrt2}{2} + 1$

$= \frac{\sqrt2+2}{2}$

3) $t + \frac{1}{t} = 2$

$t^2 + 1 = 2t$

$t^2 - 2t + 1 = 0$

$(t-1)^2 = 0$

$\tan x = 1$

$x = 45°$

$\cos x = \frac{\sqrt2}{2}$ C

4) $\tan 190 = +\tan 10 = x$

$\cot 350 = \cot(-10) = -\cot 10 = \frac{-1}{x}$

$\sin 260 = \sin(180+80) = -\sin 80 = -\cos 10 = \frac{-1}{\sqrt{1+x^2}}$

$\sec 170 = \frac{1}{\cos 170} = \frac{1}{-\cos 10} = \sqrt{1+x^2}$

$\frac{x + \left(\frac{-1}{x}\right)}{-c_{10}\cdot\frac{1}{-c_{10}}} = \frac{x^2-1}{x}$

5) $8x = \pi$

$4x = \frac{\pi}{2}$

$\sin 3x = \cos x$

$\sqrt{1-\sin 3x} = \sqrt{1-\cos x}$

$\to 1 - 2\sin^2\frac{x}{2}$

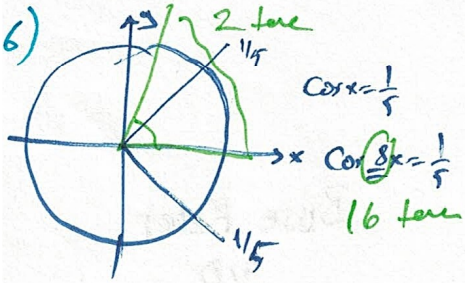
$= \sqrt2\cdot\left|\sin\frac{x}{2}\right|$

$+$

$= \sqrt2\cdot\sin\frac{x}{2}$

$\frac{\sqrt2\cdot\sqrt2\cdot\sin\frac{x}{2}}{2\cdot\sin\frac{x}{2}\cdot\cos\frac{x}{2}} = \frac{1}{\cos\frac{x}{2}} = \sec\frac{x}{2}$

6)



$\cos x = \frac{1}{5}$

$\cos 8x = \frac{1}{5}$

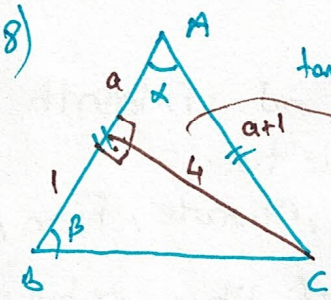
16 tane

7) $a\cdot\cos x + b\cdot\sin x \Rightarrow \max = \sqrt{a^2+b^2}$

$\min = -\sqrt{a^2+b^2}$

$\sqrt{\frac{1}{4}+2} = \frac{3}{2}$

8)



$\tan\beta = 4$

$16 + a^2 = a^2 + 2a + 1$

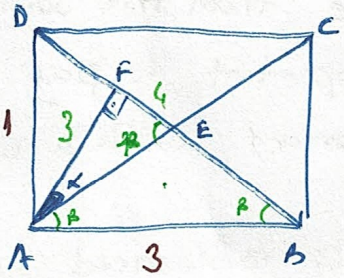
$a = \frac{15}{2}$

$\tan\alpha = \frac{4}{\frac{15}{2}} = \frac{8}{15}$

9) $\frac{C_x}{S_x} - \frac{S_y}{C_y} = \frac{C_x\cdot C_y - S_x\cdot S_y}{S_x\cdot C_y} = \frac{\cos(x+y)}{\frac{1}{12}} =$

$\cos(x+y) = \frac{1}{4}$

10)



$\alpha + 2\beta = 90°$

$\tan\alpha = \cot 2\beta$

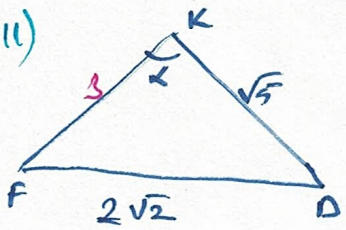
$\tan 2\beta = \frac{2t_\beta}{1-t_\beta^2} = \frac{2/3}{1-\frac{1}{9}}$

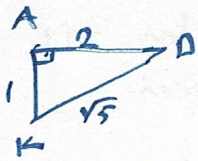
$= \frac{2}{3}\cdot\frac{9}{8}$

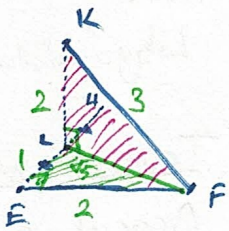
$= \frac{3}{4}$

$\tan\alpha = \frac{4}{3}$

11)







$8 = 9 + 5 - 2\cdot3\cdot\sqrt5\cdot\cos\alpha$

$6\sqrt5\cdot\cos\alpha = 6$

$\cos\alpha = \frac{1}{\sqrt5}$

12) $2C^2 + S\cdot C = \frac{3}{2}\cdot 1 \to C^2+S^2$

$4C^2 + 2SC = 3C^2 + 3S^2$

$C^2 + 2SC - 3S^2 = 0$

$C \quad +3S$

$C \quad -S$

$C + 3S = 0 \quad \vee \quad C - S = 0$

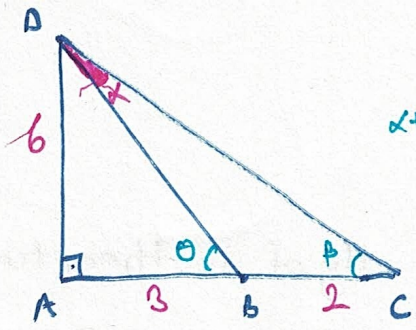
$3S = -C$

$\tan x = -\frac{1}{3}$

$\tan x \neq 1$

$\cos x = \frac{\mp 3}{\sqrt{10}}$ 9/10

13)



$\alpha+\beta=\theta$

$\alpha=\theta-\beta$

$t_\alpha = t_{(\theta-\beta)}$

$= \dfrac{t_\theta - t_\beta}{1+t_\theta . t_\beta}$

$= \dfrac{2-6/5}{1+\frac{12}{5}} = \dfrac{4}{17}$

14) $\underbrace{\arcsin 3x}_{\alpha \text{ olsun}} = \underbrace{\arccos 4x}_{\alpha \text{ olmalı}}$

$\sin\alpha = 3x$

$\cos\alpha = 4x$

$\sin^2\alpha + \cos^2\alpha = 1$

$9x^2 + 16x^2 = 1$

$x^2 = \dfrac{1}{25}$

$x = \dfrac{1}{5}$, $x = \dfrac{-1}{5}$

15) $\dfrac{2.\sin\frac{\pi}{7}.\cos\frac{\pi}{7}.\cos\frac{2\pi}{7}.\cos\frac{3\pi}{7}}{2.\sin\frac{\pi}{7}}$

$\dfrac{2.\sin\frac{2\pi}{7}.\cos\frac{2\pi}{7}.\cos\frac{3\pi}{7}}{2.\ 2.\sin\frac{\pi}{7}}$

$\dfrac{\sin\frac{4\pi}{7}.\cos\frac{3\pi}{7}}{4.\sin\frac{\pi}{7}} = \dfrac{2.\sin\frac{3\pi}{7}.\cos\frac{3\pi}{7}}{2.4.\sin\frac{\pi}{7}} = \dfrac{\sin\frac{6\pi}{7}}{8.\sin\frac{\pi}{7}}$

$= 1/8$