# TEST 5

1) $\hat{C}=90^\circ \Rightarrow \hat{A}+\hat{B}=90^\circ$ $\quad \sin^2 C=1$

$\sin\hat{B}=\cos\hat{A} \Rightarrow \sin^2 A+\underbrace{\sin^2 B}_{\cos^2 A}=1$ $\quad$ pay $=1+1=2$

$\cos^2(\underbrace{A+B+C}_{180^\circ})=+1$ $\quad$ cevap $\frac{2}{+1}=+2$ $\quad$ (A)

2) $f(\underbrace{\sin 2x}_{a})=\sin x+\cos x=\sqrt{(S+C)^2}$
$=\sqrt{S^2+2SC+C^2}$
$=\sqrt{1+\underbrace{\sin 2x}_{a}}$

$f(a)=\sqrt{1+a} \Rightarrow f(\cos 2x)=\sqrt{1+\cos 2x}$, $\quad a \to \cos 2x$, $\quad \cos 2x = 2\cos^2 x-1$
$=\sqrt{2}\cdot|\cos x|$
$=\sqrt{2}\cdot\cos x$ $\quad$ (D)

3) $\tan\left(\frac{\pi}{2}-A-B\right)=\tan\left(\frac{\pi}{2}-(A+B)\right)=\cot(A+B)=\frac{\cos(A+B)}{\sin(A+B)}$

$\sin(-A-B)=\sin(-(A+B))=-\sin(A+B)$

cevap: $-\cos(\underbrace{A+B}_{180-C})=+\cos C$ $\quad$ (C)

4) pay; $1+\underbrace{\sin\theta}_{2 S_{\theta/2} C_{\theta/2}}+\underbrace{\cos\theta}_{2C^2_{\theta/2}-1}=\cancel{2}.C.(\cancel{S}+C)$ $\quad \cot\frac{\theta}{2}=\frac{1}{3}$

payda; $1+\underbrace{\sin\theta}_{2 S_{\theta/2} C_{\theta/2}}-\underbrace{\cos\theta}_{1-2S^2_{\theta/2}}=\cancel{2}.S(\cancel{C}+S)$ $\quad \tan\frac{\theta}{2}=3$

$\tan\theta=\frac{2.t}{1-t^2}=\frac{2.3}{1-9}=\frac{6}{-8}=\frac{-3}{4}$ $\quad$ (C)

5) $\cot 3A-\cot A=\frac{1}{t_{3A}}-\frac{1}{t_A}=\frac{t_A-t_{3A}}{t_{3A}.t_A}$

$\frac{1}{t_{3A}-t_A}-\frac{t_{3A}.t_A}{\underbrace{t_A-t_{3A}}_{(-1)}}=\frac{1+t_{3A}.t_A}{t_{3A}-t_A}=\frac{1}{\tan(3A-A)}$

(D) $\quad =\cot 2A$

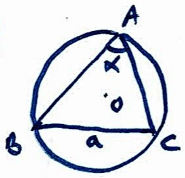
6) $a^3+\frac{1}{a^3}=\underbrace{\left(a+\frac{1}{a}\right)}_{2C}.\left(a^2-1+\frac{1}{a^2}\right)$ ?

$a+\frac{1}{a}=2C \Rightarrow a^2+2+\frac{1}{a^2}=4C^2 \Rightarrow a^2+\frac{1}{a^2}=4C^2-2$

$=2C.(4C^2-3)$
$=8C_x^3-6C_x$

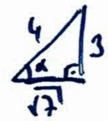
$\cos 3x=\cos(2x+x)=C_{2x}C_x-S_{2x}S_x$ $\quad -C^2+1$
$=(2C^2-1).C-2.S.C.S$
$=2C^3-C+2C^3+2C$
$=4C^3-3C$

(E)

7) 

$2a=3R$ $\quad \frac{a}{\sin\alpha}=2R$

$\sin\alpha=\frac{a}{2R}=\frac{3}{4}$, $\quad a = \frac{3R}{2}$



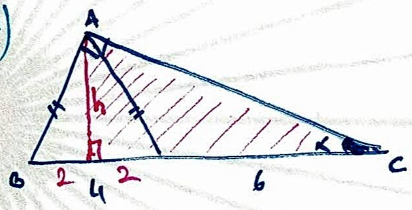
$\cos\alpha=\frac{\sqrt{7}}{4}$ $\quad$ (D)

8) $C(a+b)+C(a-b)=C_aC_b-\cancel{S_aS_b}+C_aC_b+\cancel{S_aS_b}=2C_aC_b$

pay $=2(C_a)(C_b-1)$

$S(a+b)+S(a-b)=SC+\cancel{CS}+SC-\cancel{CS}=2.S_aC_b$

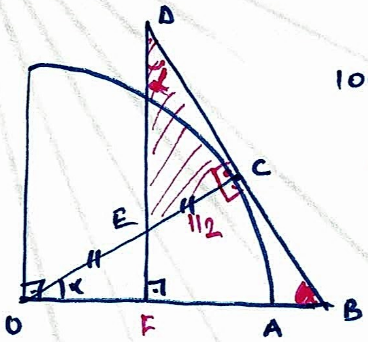
payda $2(S_a).(C_b-1)$ $\quad$ cevap $\cot a$ $\quad$ (E)

9) 

$\cot\alpha=\frac{8}{4}=2$

$h^2=2.8=16$ $\quad$ (C)

$h=4$

10) 

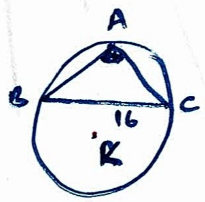
$|OC|=1$

$\cot\alpha=\frac{|CD|}{1/2}$

$|CD|=\frac{\cot\alpha}{2}$

Alan $=\frac{\frac{\cot\alpha}{2}\cdot\frac{1}{2}}{2}=\frac{\cot\alpha}{8}$

(E)

11) 

$R=10$ $\quad \tan A=?$, $\quad \hat{A}>90^\circ$

$\frac{16}{\sin A}=2.10$ $\quad \sin A=\frac{16}{20}=\frac{4}{5}$

$\tan A=-\frac{4}{3}$ $\quad$ (A)

12) $-1\le\frac{3x-13}{5}\le 1$

$-5\le 3x-13\le 5$

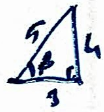
$8\le 3x\le 18$ $\quad \to \quad \frac{8}{3}\le x\le 6$

(C)

13) $A = \frac{2\sin\alpha\cdot\cos\alpha}{2} = \frac{1}{2}\cdot\sin 2\alpha$ $\quad -1 \le \sim \le 1$ $\qquad -\frac{1}{2} \le A \le \frac{1}{2}$

E

14) $t_\beta = \frac{4}{3}$ , $\alpha+\beta = 150°$




$3\cdot S_\alpha + 4\cdot C_\alpha = 3\cdot\left(S_\alpha + \frac{4}{3}\cdot C_\alpha\right)$ $\quad \to t_\beta = \frac{S_\beta}{C_\beta}$

$= 3\cdot\left(\frac{S_\alpha\cdot C_\beta + C_\alpha\cdot S_\beta}{C_\beta}\right)$

$= \cancel{3}\cdot\frac{\sin(\alpha+\beta)}{C_\beta}$ $\quad \sin(\alpha+\beta) \to \sin 30 = \frac{1}{2}$, $\quad C_\beta \to \cancel{3}/5$

$= \frac{5}{2}$ B

15) $12\cdot S_x + 5\cdot C_x = 13$

$\frac{12}{13}\cdot S_x + \frac{5}{13}\cdot C_x = 1 \Rightarrow S_x\cdot C_y + C_x\cdot S_y = 1$

Cos y olsun sin y olur.

$\Rightarrow \sin(x+y) = 1$

$\Rightarrow x+y = 90°$

$\sin x - \cos x = \cos y - \sin y = \frac{12}{13} - \frac{5}{13} = \frac{7}{13}$ D

16) $f\left(\frac{\pi}{2}\right) = \frac{1}{2}\cdot\tan\frac{\pi}{6} = \frac{\sqrt{3}}{6}$ $\qquad$ ~~A~~ ~~B~~ C ~~D~~ ~~E~~

$f(\pi) = \frac{1}{2}\cdot\tan\frac{\pi}{3} = \frac{\sqrt{3}}{2}$

$f(3\pi) = \frac{1}{2}\cdot\tan\frac{3\pi}{3} = \frac{1}{2}\cdot\tan\pi = 0$

$f(3\pi^-) = \frac{1}{2}\cdot\tan\pi^- < 0$