TEST 3

1) $a = (-)(+) = (-)$

$b = (+)(-) = (-)$

$c = (-).(-) = (+)$

A) $a+b-c < 0$

B) $a.c < 0$

C) $a+b < 0$

D) $\frac{a}{5} > 0$

E) $a-c < 0$

2) $\sin(\pi - 2x) = \sin 2x$

$\cos(2\pi - 3x) = \cos(-3x) = \cos 3x$

$\sin 2x + \cos 3x = \frac{2}{\sqrt{5}}$

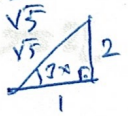
$10x = \pi$

$5x = \frac{\pi}{2}$

$\cos 3x + \cos 3x = \frac{2}{\sqrt{5}}$

$\cos 3x = \frac{1}{\sqrt{5}}$

$\tan(\pi + 3x) = +\tan 3x = \frac{2}{1} = 2$



3) $\frac{s-1}{s} : \frac{1-s^2}{s} = \frac{s-1}{s} \cdot \frac{s}{(1-s)(1+s)} = \frac{-1}{1+s} = a$

$1 + \sin x = -\frac{1}{a}$

$\sin x = -1 - \frac{1}{a}$

$= \frac{-a-1}{a}$

4) $R_6(x) = \frac{1}{6}.(s^6 + c^6) = \frac{1}{6} \cdot \left((s^2)^3 + (c^2)^3\right)$

$= \frac{1}{6} \cdot (s^2+c^2)(s^4 - s^2c^2 + c^4)$

$= \frac{1}{6} \cdot (s^4 - s^2c^2 + c^4)$

$R_4(x) = \frac{1}{4}(s^4 + c^4)$

$R_4(x) - R_6(x) = \frac{s^4+c^4}{4} - \frac{s^4+c^4}{6} + \frac{s^2c^2}{6}$

(3) (2) (2)

$= \frac{s^4 + c^4 + 2s^2c^2}{12}$

$= \frac{(s^2+c^2)^2}{12}$

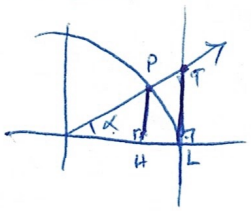
$= \frac{1}{12}$

5) I. 45° den küçük açılar için $\tan x < \cot x$

$\tan x > \cot x$

II. 45° ye kadar $\cos x > \sin x$

III. $\tan x > \sin x$ ✓

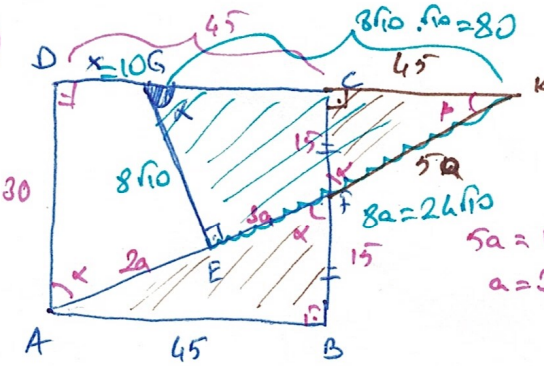


IV. $\cos x > \cot x$.

6) $8\sqrt{10} \cdot \sqrt{10} = 80$

$|DK| = 90$

$\tan x = 3$



7) ABCD kare

$\tan\alpha$

$\tan 2\alpha = 2$

$\frac{2.t_x}{1-t_x^2} = 2$

$2 - 2t^2 = 2t$

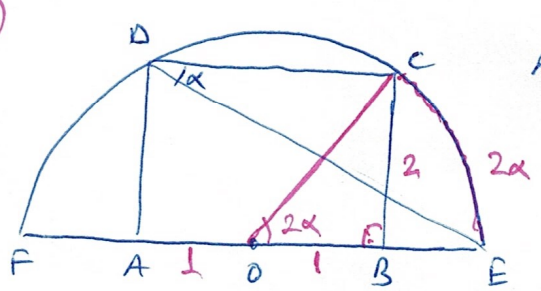
$0 = t^2 + t - 1$

$\Delta = 1 - 4.1.(-1) = 5$

$t_{1,2} = \frac{-1 \pm \sqrt{5}}{2}$

$t = \frac{-1-\sqrt{5}}{2}$

$t = \frac{-1+\sqrt{5}}{2}$



8) $\left(1 + \frac{c}{s}\right)^2 = \left(\frac{s+c}{s}\right)^2 = \frac{s^2 + 2sc + c^2}{s^2} = \frac{1+2sc}{s^2}$

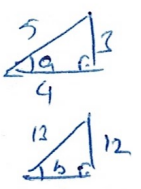
$A = s^2 \cdot \frac{1+2sc}{s^2} = 1 + \sin 2x$

$-1 \le \sin 2x \le 1$

$0 \le A \le 2$ E

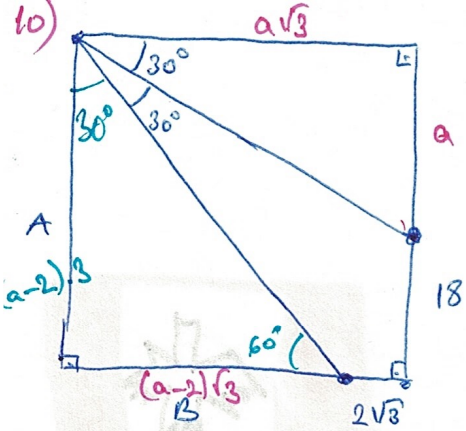
9) $\arcsin \frac{3}{5} = a \Rightarrow \sin a = \frac{3}{5}$

$\arccos \frac{5}{13} = b \Rightarrow \cos b = \frac{5}{13}$



$\tan(a+b) = \frac{t_a + t_b}{1 - t_a.t_b} = \frac{\frac{3}{4} + \frac{12}{5}}{1 - \frac{36}{20}} = \frac{-63}{16}$

10)



$a+18 = 3a-6$

$24 = 2a$

$a = 12$

$A = 10$

$B = 10\sqrt{3}$

$A+B = 10(\sqrt{3}+1)$

11) $\frac{2S}{C} - \frac{C}{S} = \frac{1}{S} \Rightarrow \frac{2S}{C} = \frac{1+C}{S}$

$\Rightarrow 2S^2 = C + C^2$

$2(1-C^2) = C + C^2$

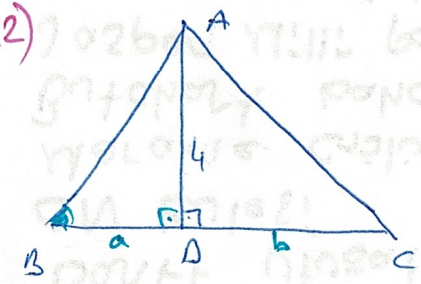
$3C^2 + C - 2 = 0$

$3C \quad -2$

$C \quad +1$

$\cos x = \frac{2}{3}$ veya $C_x = -1$

12)

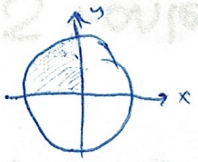


$\frac{a}{4} + \frac{b}{4} = 6$

$a+b = 24$

$|BC| = 24$

13)



$t_\alpha = \frac{-7}{24} \Rightarrow t_{\frac{x}{2}} = ?$

$\frac{2 \cdot t_{\frac{x}{2}}}{1 - t_{\frac{x}{2}}^2} = \frac{-7}{24}$

$7t^2 - 48t - 7 = 0$

$7t \quad +1$

$t \quad -7$

$t_{\frac{x}{2}} = \frac{-1}{7}$ V $t_{\frac{x}{2}} = 7$

14) $2x + 2y = 90^\circ$

$x + 2y = 2x + 2y - x = 90^\circ - x$

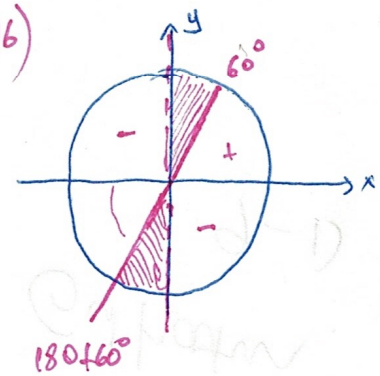
$\sec(x+2y) = \sec(90^\circ - x) = \frac{1}{\cos(90-x)} = \operatorname{cosec} x$

15) $x = \sin 12^\circ = \cos 78^\circ = 1 - 2\cdot\sin^2 39^\circ$

$2 \cdot S_{39}^2 = 1 - x$

$S_{39}^2 = \frac{1-x}{2} \Rightarrow S_{39} = \sqrt{\frac{1-x}{2}}$

16)



$\tan x \geq \sqrt{3}$

$\left[\frac{4\pi}{3}, \frac{3\pi}{2}\right)$

17) $(1+\tan 1)\cdot(1+\tan 44) = 1 + \tan 1 + \tan 44 + \tan 1 \cdot \tan$

$1 = 2$

$\tan 45 = \tan(1+44) = \frac{t_1 + t_{44}}{1 - t_1 \cdot t_{44}} = 1$

$t_1 + t_{44} = 1 - t_1 \cdot t_{44}$

$t_1 + t_{44} + t_1 \cdot t_{44} = 1$ V

$t_2 + t_{43} + t_2 \cdot t_{43} = 1$

$(1+\tan 2)\cdot(1+\tan 43) = 2$

$(1+\tan 1)\cdot(1+\tan 42) = 2$

$\vdots$

$2^{22} \cdot 2 = 2^{23}$

18) $(a-b)^2 - c^2 = -3ab$

$a^2 - 2ab + b^2 - c^2 = -3ab$

$a^2 + b^2 + a \cdot b = c^2$

$c^2 = a^2 + b^2 - 2ab \cdot \cos\hat{C}$; $\cos\hat{C} = -\frac{1}{2}$

$\hat{C} = 180 - 60^\circ = 120^\circ$

$\tan C = \tan 120 = -\tan 60 = -\sqrt{3}$