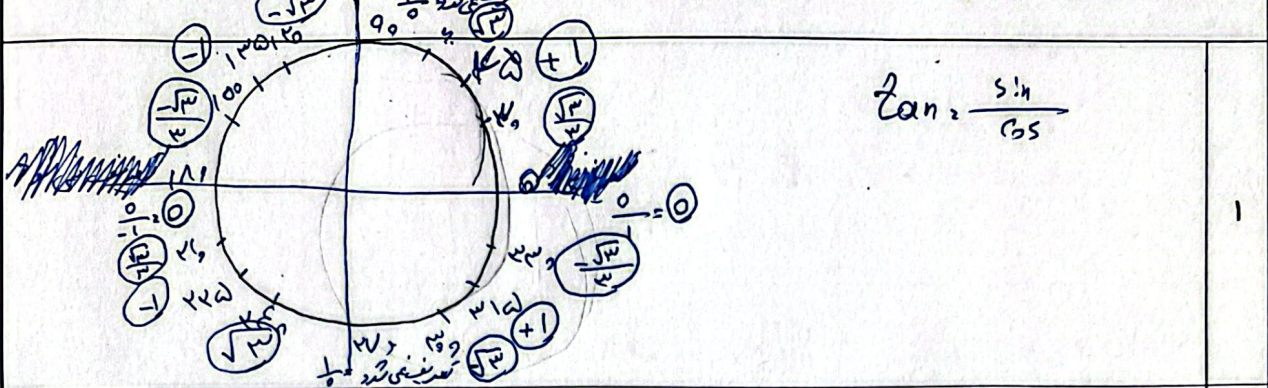




$$\tan z = \frac{\sin}{\cos}$$

۱

الف) $\frac{1}{2} + (-1) + 2(-1) = \frac{-3}{2}$
 ب) $\frac{\sqrt{3}}{2} + \frac{\sqrt{3}}{2} - 2(\frac{\sqrt{3}}{2}) = \frac{0}{2}$
 ج) $\frac{\sqrt{3}}{2} + 2(\frac{\sqrt{3}}{2}) - \frac{2\sqrt{3}}{2} = 0$
 د) $\cos(0) + \sin(\frac{\pi}{2}) = 1 + 1 = 2$

۲

$x=0 \rightarrow x^2 + 4x + 2 = 0$
 $0^2 + 4 \cdot 0 + 2 = 2$
 $0^2 + 0 - 2 = -2$
 $(0+2)(0-2) = 0$
 $a=2, 1 \rightarrow a=1$
 $\text{و } \frac{1}{2}$

$f(1) \begin{cases} x^2 + 4x + 2 = 0 \\ \text{و} \\ 2x + 3 = 0 \end{cases}$

۳

$|x+1| \geq 2$
 $\begin{cases} x+1 \geq 2 \rightarrow x \geq 1 \\ x+1 \leq -2 \rightarrow x \leq -3 \end{cases}$

$x=3 \rightarrow \begin{cases} 2x^2 - 6 = 0 \\ 12 - 6 = 6 \end{cases}$

$a, b, 11, 4, 14$

۴

الف) $\frac{1}{x^2(x-4)}$ $x^2(x-4) \neq 0$ $x \neq 0, 4$ $D_f = \mathbb{R} - \{0, 4\}$

۵

ب) $\frac{1}{x^2(x^2+4x+4)}$ $D_f = \mathbb{R}$
 در بهترین حالت عبارت منفرجه نمی شود با جمع
 صواب است

$$\Delta = 16 - 4(4) = 0$$

الف) $\begin{aligned} x^2 - 1 &\geq 0 \\ x^2 &\geq 1 \\ x &\geq 1 \\ x &\leq -1 \end{aligned}$ $I \cap II \rightarrow P_f = \text{---} \quad (-\infty, -1] \cup [1, \infty)$	ب) $\begin{aligned} 4 - 3x &\geq 0 \\ 4 &\geq 3x \\ 1 &\geq x \\ 4x - 3 &\geq 0 \\ 4x &\geq 3 \\ x &\geq \frac{3}{4} \end{aligned}$ $P_f = \left[\frac{1}{4}, 1\right]$	٤																								
$\begin{aligned} 14 - a &\geq 0 \\ a &\leq 14 \\ b - 3x &\geq 0 \\ b &\geq 3 \\ \frac{b}{a} &= \frac{3}{14} = \frac{1}{\frac{14}{3}} \end{aligned}$		٧																								
الف) $\frac{(x-3)(x+2)}{(x+3)(x-3)(x+2)(x-2)}$ <table data-bbox="221 960 683 1162"> <tr> <td>x</td> <td>-3</td> <td>-2</td> <td>2</td> <td>3</td> </tr> <tr> <td>$P(x)$</td> <td>+</td> <td>-</td> <td>-</td> <td>+</td> </tr> </table>	x	-3	-2	2	3	$P(x)$	+	-	-	+	ب) $P_f = (-\infty, -3) \cup (2, 3) \cup (3, \infty)$ $\frac{(x-1)(x-3)(x+2)}{(x+1)(x+3)(x-2)}$ <table data-bbox="780 960 1163 1072"> <tr> <td>x</td> <td>-3</td> <td>-2</td> <td>-1</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>$P(x)$</td> <td>+</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>+</td> </tr> </table> $P_f = (-\infty, -3) \cup [-2, -1) \cup [1, 2) \cup [3, \infty)$	x	-3	-2	-1	1	2	3	$P(x)$	+	-	-	-	-	+	٨
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$P(x)$	+	-	-	+																						
x	-3	-2	-1	1	2	3																				
$P(x)$	+	-	-	-	-	+																				
الف) $\begin{aligned} 2[x] - 4 &\geq 0 \\ 2[x] &\geq 4 \\ [x] &\geq 2 \\ x &\geq 2 \\ P_f &= [2, \infty) \end{aligned}$	ب) $\begin{aligned} 2[x] &\geq 5 \\ [x] &\geq 2.5 \\ x &\geq 3 \\ P_f &= [3, \infty) \end{aligned}$	٩																								
الف) $\frac{x-1}{1-x-3} \geq 0 \rightarrow \frac{1}{-1} \geq 0$ $\frac{4-x}{(x+3)^2} \geq 0 \rightarrow \frac{4}{+} \geq 0$ $P_f = [1, 4] - \{3\}$	ب) $\begin{aligned} \{x\} - 5 &\geq 0 \\ \{x\} &\geq 5 \\ x &\geq 5 \\ 2\{x\} &\geq 0 \\ 2\{x\} &\rightarrow x \leq 3 \\ P_f &= \emptyset \end{aligned}$	١٠																								