

$$f(x+1) + f(x+2) = 3x + f(1)$$

$$f = ax + b$$

$$a(x+1) + b + a(x+2) + b = 3x + a + b$$

$$2ax + a + a + 2b = 3x + a + b \rightarrow 2ax + b = 3x \rightarrow \boxed{b=0, a=1}$$

$$f(x) = x$$

$$y = \sqrt{f(x)-x^2} \rightarrow y = \sqrt{x-x^2} \begin{cases} x=0 \rightarrow 0 \\ x=1 \rightarrow 0 \\ x \in (0,1) \rightarrow \Delta \end{cases} \rightarrow R_y = [0, \Delta]$$

$$(0, +\infty) - \{1\} \rightarrow f(x) = \frac{x^2 - 1}{x+1} \rightarrow \frac{x(x+1)(x-1)}{x+1} \begin{cases} x=1 \rightarrow y=1 \\ x \neq 1 \rightarrow y \neq 1 \end{cases}$$

$$D_f = R - \{1\}$$

$$R_f = (-1, -\infty) - \{1\} \rightarrow C = -1$$

$$f\left(\frac{1-x}{-1}\right) = f\left(\frac{1}{-1}\right) = f(-1)$$

$$\hookrightarrow y = x(x-1), x \in (-1, 1) \rightarrow \text{graph} \rightarrow f(-1) = 1$$

$$y = ax + b \rightarrow y = \sqrt{x^2 + 2bx + b^2} - 1 \rightarrow (x-1)^2 = x^2 - 2x + 1 \rightarrow \boxed{a = -2, b = 1}$$

$$y = x-1 \rightarrow D_y = [-1, 1] \rightarrow R_y = [-1, 1]$$

$$\frac{x+1}{1-x} > 0 \rightarrow \frac{x+1}{x-1} < 0 \rightarrow D_y = (-1, 1)$$

$$\frac{a(x^2+1)}{x^2+b} > 0 \rightarrow \frac{a}{b} > -1 \rightarrow b < a$$

$$x \rightarrow 0 \rightarrow -\frac{1}{b} < -1 \rightarrow b < 1 \rightarrow a + b < 1$$

$$\hookrightarrow \infty \rightarrow \frac{1}{a} < 1 \rightarrow a < 1$$

$$\frac{[x]}{x} + \frac{1}{x} \begin{cases} x=1 \rightarrow 1 \\ 0 < x < 1 \rightarrow \frac{x}{x} = 1 \\ x=0 \rightarrow \emptyset \rightarrow \text{چون } x=0 \text{ در مخرج است} \\ -1 < x < 0 \rightarrow \frac{-1}{x} + \frac{1}{x} = -\frac{1}{x} = -\frac{x-1}{x} \end{cases} \rightarrow \text{graph}$$

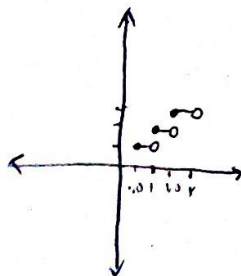
~~10 < x < 2~~

~~10 < x < 2~~

$$10 < x < 2 \rightarrow 1 + 2 = 3$$

$$1 < x < 10 \rightarrow 1 + 1 = 2$$

$$0 < x < 1 \rightarrow 0 + 1 = 1$$



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$$\left| \frac{x+1}{a \cdot 2^x} \right| \rightarrow -1 < \frac{x+1}{a \cdot 2^x} < 1$$

$$x+1 < a \cdot 2^x \rightarrow -2 < (a-1)x$$

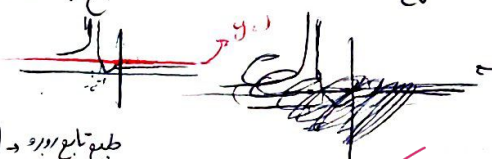
$$x+1 < a \cdot 2^x \rightarrow -2 < (a-1)x$$

$$\frac{x+1}{2^x}$$

تابع به صورت

$$\frac{1}{a} z$$

تابع مختلط است



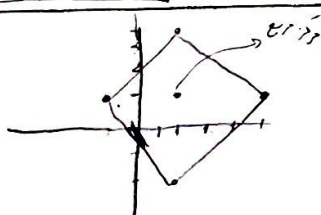
$$\left| \frac{x+1}{2^x} \right|$$

$$x = -2$$

$(b, +\infty) \rightarrow (-2, +\infty) \rightarrow$ تابع

$$b = -2, a = 1$$

$$1 - (-2) = 3$$



$$x > 2, y < 1 \rightarrow x - 2 - y + 1 = 3 \rightarrow y = x - 4$$

$$x > 2, y > 1 \rightarrow x - 2 + y - 1 = 3 \rightarrow y = -x + 6$$

$$x < 2, y < 1 \rightarrow 2 - x - y + 1 = 3 \rightarrow y = -x$$

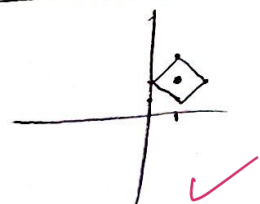
$$x < 2, y > 1 \rightarrow 2 - x + y - 1 = 3 \rightarrow y = x + 2$$

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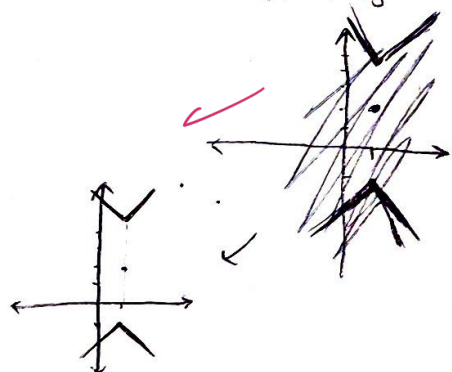
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$$|x-1| + |y-2| = 1$$



$$|x-1| + |y-2| = 3$$



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$$y \cdot r x + a x + b \rightarrow y \cdot (r+a) x + b$$

$$a x + b > 0$$

$$y \cdot r x - a x - b \rightarrow y \cdot (r-a) x - b$$

$$a x + b < 0$$

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$$(r+a) > 0 \rightarrow -\frac{1}{r} + \frac{1}{r} =$$

$$(r+a)$$

$$-2 < a < 2$$

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