

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

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

$$f(3) = 3x$$

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

$$f(3) = 3$$

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

$$3a = 3 \quad a = 1$$

$$2ax + a + b + ax + 2a + b$$

$$3 + 2b = 3 \quad b = 0$$

$$f(x) = x$$

$$\sqrt{x - x^2} = \sqrt{-x^2 + x}$$

$$\frac{-b}{2a} = \frac{-1}{-2} = \frac{1}{2}$$

$$-\frac{1}{2} + \frac{1}{2} = \frac{1}{2}$$

$$(-\infty, \frac{1}{2}] \rightarrow [0, \frac{1}{2}]$$

$$f(x) = \frac{x^2 - 4x}{x + 2}$$

$$R - \{a, b\} \rightarrow a, b \rightarrow -2, 4$$

$$\frac{x(x^2 - 4)}{x + 2}$$

$$x: [2, +\infty) - \{4\} \rightarrow c = -1$$

$$f(\frac{4}{-2}) = f(-2) = 3$$

[2]

$$\frac{x(x+2)(x-2)}{(x+2)} = x^2 - 2x$$

$$x^2 - 2x = 1$$

$$x^2 - 2x - 1 = 0$$

$$x^2 - 2x - 1 = 0$$

$$f - f(-1) = 34$$

$$\frac{2+4}{2} = (4) \quad \frac{2-4}{2} = (-2)$$

[3]

$$\sqrt[3]{x^3 + 0x^2 + bx - 1}$$

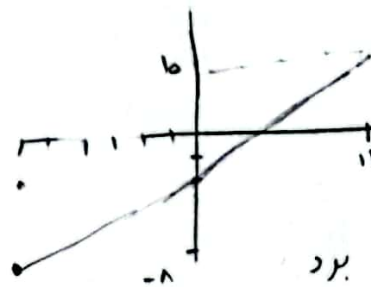
$$\sqrt[3]{(x-2)^3} = x-2$$

$$x^3 - 1 - 4x^2 + 12x$$

$$a = -4$$

$$b = 12$$

$$[-4, 12]$$



$$x: [-1, 10]$$

[4]

$$\left(\frac{x+1}{1-x}\right)^{\frac{1}{a}} \rightarrow \text{بیشترین مقدار}$$

$$\frac{x+1}{1-x}$$

$$\frac{-1}{-1} + \frac{1}{1} = 2$$

$$[-1, 1]$$

$$y = \frac{ax^2 - 1}{x^2 + b} \rightarrow 0 \quad -\frac{1}{b}$$

$$(-\frac{1}{b}, a)$$

$$DF \rightarrow [-1, 1]$$

$$b = 1$$

$$a = 1$$

$$a + b = 2$$

[5]

$$\frac{[x]}{x} + \frac{|x|}{x}$$

$$[-1, 1]$$

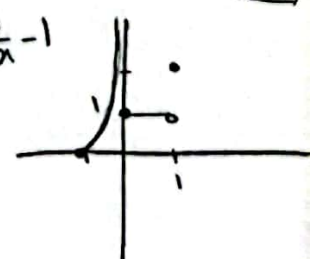
$$[-1, 0)$$

$$\frac{-1}{x} + \frac{-x}{x}$$

$$-\frac{1}{x} - 1$$

$$[0, 1) \rightarrow 1$$

$$1 \rightarrow 2$$

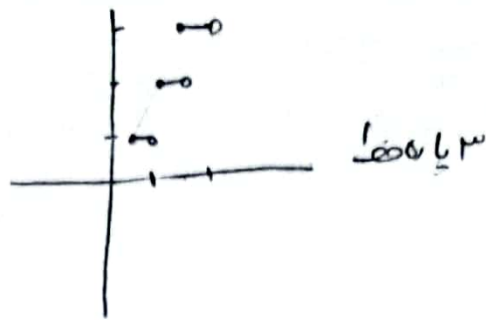


$$y = [x] + [x + \frac{1}{p}] \quad (\frac{1}{p}, 2)$$

$$[\frac{1}{p}, 1) \quad [x + \frac{1}{p}]$$

$$[1, \frac{3}{p}) \quad 1 + [x + \frac{1}{p}]$$

$$[\frac{3}{p}, 2) \quad 1 + [x + \frac{1}{p}]$$



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$$a=1 \quad b=-2$$

$$1-2 \in (-1)$$

V

$$|\frac{x+1}{ax+3}| < 1 \quad \frac{|x+1|}{|ax+3|} < 1$$

$$|x+1| < |ax+3|$$

$$x^2+1+2x < a^2x^2+9+4ax$$

$$x^2(1-a^2) + (2-4a)x - 8 < 0$$

$$a = \pm 1$$

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

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

$$a=1 \quad -4x-8 < 0$$

$$a=-1 \quad 8x-8 < 0$$



در این صورت
دو خط موازی است پس هیچ جوابی نیست

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

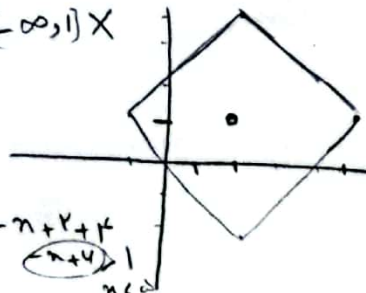
$$y > 1 \quad 3 - |x-2| + 1 = y \quad x > 2$$

$$-|x-2| + 4 = y \quad x < 2$$

$$y < 1 \quad |x-2| - 3 + 1 = y$$

$$|x-2| - 2 = y \quad x > 2$$

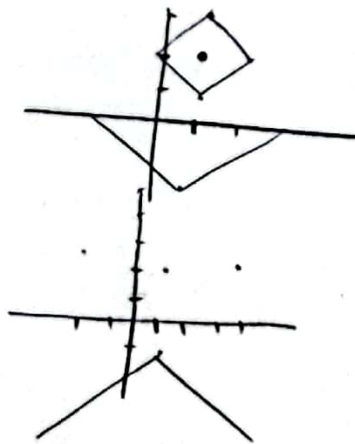
$$x < 2 \quad -x$$



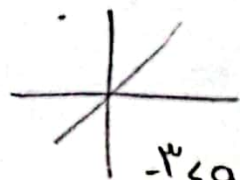
$$الف) |x-1| + |y-2| = 1$$

$$ب) |x-1| - |y-2| = -3$$

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



$$y = px + |ax+b|$$



$$px + |ax+b|$$

$$x = -\frac{b}{a}$$

$$-\frac{b}{a}$$

$$(p-a)x+b \quad (p+a)x+b$$

$$a < p$$

$$a > -p$$

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