

۲. آزمون ضیق کامل نوشتار!

کالیبراسیون ۴

سارنا ساری

الف) $x - 2\left[\frac{x}{2}\right] = 2\left(\frac{x}{2}\right) - 2\left[\frac{x}{2}\right] = 2\left(\frac{x}{2} - \left[\frac{x}{2}\right]\right) \Rightarrow [0, 2)$

①
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$R = [0, 4)$ ✓ کامل ندارد

ب) $\log y = \frac{\sin x + 4}{[2, 5]} \Rightarrow y = [1.3, 1.5] \Rightarrow R = [1.3, 1.5]$ ✓

~~$R = [0, 4) \cup (1, +\infty)$~~

②
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$\frac{x^2 - 4}{x^2 - 9} = y \Rightarrow x^2 = \frac{9y^2 - 4}{y^2 - 1} \Rightarrow \frac{9y^2 - 4}{y^2 - 1} \geq 0$ ✓

$[0, \frac{4}{9}] \cup (1, +\infty)$ ✓ اعمال کامل

الف) $\sqrt{x + \frac{1}{x}} = \square$
 $\sqrt{x + \frac{1}{x}} \in [\sqrt{2}, +\infty)$

$\sqrt{x + \frac{1}{x}} = \sqrt{2} \Rightarrow f(x) = 2 + 2\sqrt{2}$
 $\sqrt{x + \frac{1}{x}} = \infty \Rightarrow f(x) = \infty$
 $\sqrt{x + \frac{1}{x}} = -1 \rightarrow$ ✓ غیرممکن

③
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ب) $(2 - \sin x)(1 + \sin x) = -\sin^2 x + 2\sin x + 2 \Rightarrow \sin x = \square$
 $-1 \leq \sin x \leq 1$
 $\sin x = -1 \Rightarrow y = 0$
 $\sin x = 1 \Rightarrow y = 4$
 $\sin x = \frac{b}{a} = 1 \Rightarrow y = 4$
 $\Rightarrow R = [0, 4]$ ✓

$$D = \{1, 2, 3, \dots, 9\}$$

$$x=1 \Rightarrow f(1) = \frac{19}{9}$$

$$x=2 \Rightarrow f(2) = \frac{18}{9}$$

برای هر x از D یک جواب y داریم

$$x=9 \Rightarrow f(9) = \frac{11}{9}$$

$$\Rightarrow R = \left\{ \frac{11}{9}, \dots, \frac{19}{9}, \frac{18}{9} \right\}$$

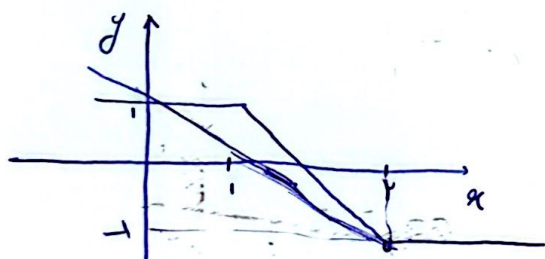
$$\frac{11}{9} + \frac{12}{9} + \dots + \frac{19}{9} = \frac{9}{9} \left(\frac{11}{9} + \frac{19}{9} \right) = \frac{100}{9}$$

تابع f نسبت به x نزاد است

$$bx+c \geq 0 \Rightarrow x \geq -\frac{c}{b} \Rightarrow -\frac{c}{b} = 2 \Rightarrow 2b = -c \Rightarrow b=1, c=-2$$

$$f(3)=1 \Rightarrow 3b+c=1$$

$$g(x) = \sqrt{x^2+4} \Rightarrow \min_{x \in \mathbb{R}} g(x) = 2 \Rightarrow R = [2, +\infty)$$



$$y=kx \quad (2, -1) \Rightarrow -1 = 2k \Rightarrow k = -\frac{1}{2}$$

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الف)

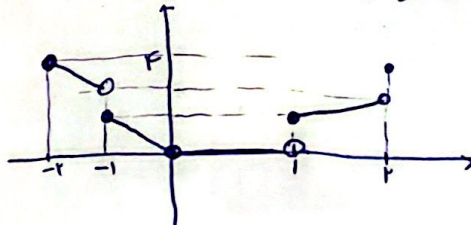
$$x=2 \Rightarrow y=2x$$

$$0 \leq x < 1 \Rightarrow y=0$$

$$-2 \leq x < -1 \Rightarrow y=-2x$$

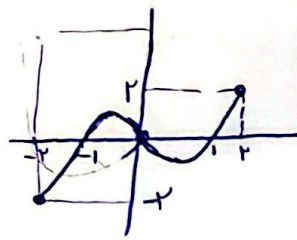
$$1 \leq x < 2 \Rightarrow y=x$$

$$-1 \leq x < 0 \Rightarrow y=-x$$



$$R = [0, 4] - \{2\}$$

$$\Rightarrow \begin{array}{c|c} -x^2-x & x^2-x \end{array}$$



$$R = [-1, 1]$$

توجه داشته باشید

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$$y = \frac{y^2 + y}{x^2 + x} = \frac{y(y+1)}{x(x+1)} = \frac{y}{x} \left. \begin{array}{l} x^2 + x \neq 0 \rightarrow x \neq -1 \\ \quad \quad \quad \rightarrow x \neq 0 \end{array} \right\}$$

$$\Rightarrow y \neq -1, y \neq 0$$

$$R_f = R_- \underbrace{[-1, 0]}_{a+b = -1}$$

①

$$y = \frac{x - 1\sqrt{x} + 1}{x - 1\sqrt{x+1}} = \frac{(\sqrt{x}-1)(\sqrt{x}+1)}{(\sqrt{x}-1)^2} = \frac{\sqrt{x}-1}{\sqrt{x}-1}$$

$$\Rightarrow \sqrt{x} = \frac{y-1}{y-1} \Rightarrow \frac{y-1}{y-1} \geq 0 \Rightarrow \frac{+}{-} \frac{1}{0} \frac{+}{+}$$

بیشتر

$$\frac{y-1}{y-1} \neq 1 \Rightarrow \text{همواره برابر}$$

$$\hookrightarrow R = (-\infty, 1) \cup [1, +\infty)$$

②

$$\frac{x^2 + yx^2 - x - 1}{x^2 - 1} = \frac{(x+1)(x+y)}{(x-1)(x+1)} = x+y$$

$$\hookrightarrow \left. \begin{array}{l} x \neq 1 \\ x \neq -1 \end{array} \right\} y = x+y \Rightarrow y \neq \frac{1}{2}, 1$$

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

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