Date: Sub: A پرنیا دباغی یازدهم ریاضی تجربی

۱۴,۷۵

①

$$\frac{1}{x-1} = |x-1| \xrightarrow{x-1=t} \frac{1}{t} = |t| \qquad x \neq 1$$

$$\Rightarrow \text{if } t>0 \Rightarrow t = |t| \Rightarrow \frac{1}{t} = t \Rightarrow t^2 = 1 \Rightarrow t = 1$$

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$$\Rightarrow \text{if } t<0 \Rightarrow |t| = -t \Rightarrow \frac{1}{t} = -t \Rightarrow t^2 = -1 \rightarrow \text{غ ق ق}$$

$\Rightarrow$ ~~فقط~~ جواب دارد $\quad t=1 \Rightarrow x-1=1 \Rightarrow x=2$

②

الف) $\left|\frac{2x-1}{x}\right| < 2 \qquad x \neq 0 \Rightarrow -2 < \frac{2x-1}{x} < 2$

$$\Rightarrow \begin{cases} \frac{2x-1}{x} < 2 \Rightarrow \frac{2x-1-2x}{x} < 0 \Rightarrow \frac{-1}{x} < 0 \Rightarrow x>0 \\ \frac{2x-1}{x} > -2 \Rightarrow \frac{2x-1+2x}{x} > 0 \Rightarrow \frac{4x-1}{x} > 0 \Rightarrow 4x-1>0 \end{cases}$$

$, x>0 \Rightarrow x > \frac{1}{4}$ و $4x-1<0$ یا $x<0 \Rightarrow x<0$

$$\xRightarrow{\cap} x > \frac{1}{4} \Rightarrow \boxed{\left(\frac{1}{4}, +\infty\right)}$$

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ب) $\left|\frac{x-2}{2x+1}\right| > 1 \qquad 2x+1 \neq 0 \Rightarrow 2x \neq -1 \Rightarrow x \neq -\frac{1}{2}$

$$\Rightarrow \begin{cases} \frac{x-2}{2x+1} > 1 \Rightarrow \frac{x-2-(2x+1)}{2x+1} > 0 \Rightarrow \frac{-x-3}{2x+1} > 0 \Rightarrow \left(-3, -\frac{1}{2}\right) \\ \text{یا} \\ \frac{x-2}{2x+1} < -1 \Rightarrow \frac{x-2+(2x+1)}{2x+1} < 0 \Rightarrow \frac{3x-1}{2x+1} < 0 \Rightarrow \left(-\frac{1}{2}, \frac{1}{3}\right) \end{cases}$$

$$\Rightarrow \left(-3, -\frac{1}{2}\right) \cup \left(-\frac{1}{2}, \frac{1}{3}\right)$$

Date: Sub:

$x^2 < |x+6|$ (3)

$\xRightarrow{\text{I}}$ if $x+6 \geq 0 \Rightarrow x \geq -6 \Rightarrow x^2 < x+6 \Rightarrow x^2 - x - 6 < 0$

$\Rightarrow (x-3)(x+2) < 0 \Rightarrow -2 < x < 3$

$\xRightarrow{\text{II}}$ if $x+6 < 0 \Rightarrow x < -6 \Rightarrow x^2 < -(x+6) \Rightarrow x^2 + x + 6 < 0$

$\Rightarrow$ غ ق ق

$\Rightarrow (-2, 3)$ $\qquad |x - \alpha| < \beta \Rightarrow \alpha = \dfrac{3 + (-2)}{2} = \boxed{\dfrac{1}{2}}$

$y = |x+1| - |2x| + |x-2|$ (4)

if $x < -1 \Rightarrow y = 1$

if $-1 \leq x < 0 \Rightarrow y = 2x + 3$

if $0 \leq x < 2 \Rightarrow y = -2x + 3$

if $x \geq 2 \Rightarrow y = -1$

$\Rightarrow y_{max} = 3 \quad (x = 0)$

$y_{min} = -1 \quad (x \geq 2) \Rightarrow \boxed{3 + (-1) = 2}$

$y = |\frac{1}{2}x| - 2 \longrightarrow$ تابع جدید : $y = |\frac{1}{2}(x+4)| - 2 + 1$ (5)

$\Rightarrow y = |\frac{1}{2}(x+4)| - 1$

$|\frac{1}{2}x| - 2 = |\frac{1}{2}(x+4)| - 1 \Rightarrow |\frac{1}{2}x| = |\frac{1}{2}(x+4)| + 1$

if $x \geq 0 \Rightarrow \frac{1}{2}x = \frac{1}{2}(x+4) + 1 \Rightarrow \frac{1}{2}x = \frac{1}{2}x + 2 + 1$

$\rightarrow$ غ ق ق

if $x < -4 \Rightarrow -\frac{1}{2}x = -\frac{1}{2}(x+4) + 1 \Rightarrow -\frac{1}{2}x = -\frac{1}{2}x - 2 + 1 \rightarrow$ غ ق ق

if $-4 \leq x < 0 \Rightarrow -\frac{1}{2}x = \frac{1}{2}(x+4) + 1 \Rightarrow -x = x + 6 \Rightarrow \boxed{x = -3} \rightarrow$ ق ق

الف) $f(x) = [|1-x| - |x+4|]$ ④ 1,75

if $x < -4 \Rightarrow f(x) = (1-x) - (-(x+4)) = 1 - x + x + 4 = 5$

$\Rightarrow f(x) = 5$

if $-4 \leq x < 1 \Rightarrow f(x) = (1-x) - (x+4) = -2x - 3 \Rightarrow$

• $f(-4) = -2(-4) - 3 = 8 - 3 = 5$

if $x \geq 1 \Rightarrow f(x) = (x-1) - (x+4) = -5$

$\Rightarrow f(x) = -5$

$\Rightarrow f(x)$ برد $= \{-5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5\}$

ب) $\frac{1}{x} - [\frac{x+1}{x}]$; $x \neq 0$

$\Rightarrow y = \frac{x+1}{x} = 1 + \frac{1}{x} \Rightarrow f(x) = \frac{1}{x} - [1 + \frac{1}{x}] =$

$(\frac{1}{x} + 1 - 1) - [1 + \frac{1}{x}] = \frac{1}{x} - [1 + \frac{1}{x}]$

$f(x) = -\{1 + \frac{1}{x}\} \in (-1, 0] \Rightarrow \boxed{(-1, 0]}$

$[-1, 0)$

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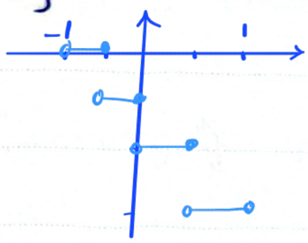
الف) $y = [-2x] - 1 \Rightarrow$

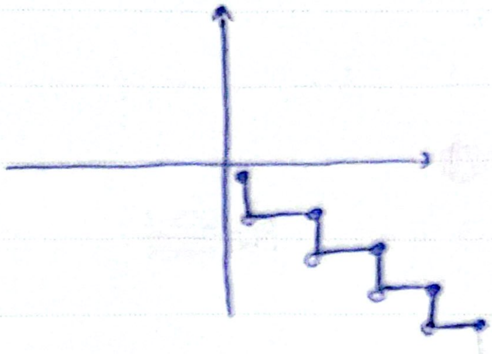
$0 < x \le \frac{1}{2} \to -2$

$\frac{1}{2} < x < 1 \to -3$

$-\frac{1}{2} < x \le 0 \to -1$

$-1 < x \le -\frac{1}{2}$





ب) $y = x - 2\left[\frac{x}{2}\right] \quad x \in (-2, 2)$

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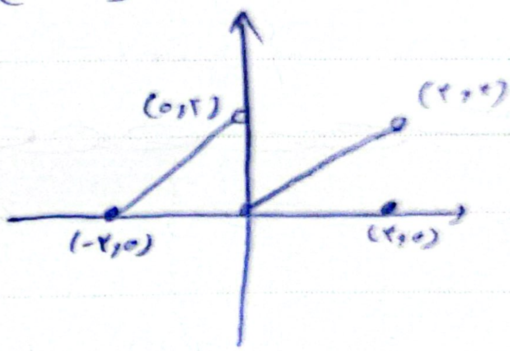

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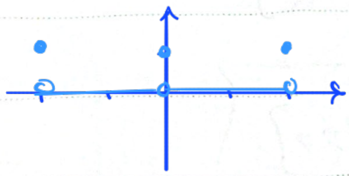
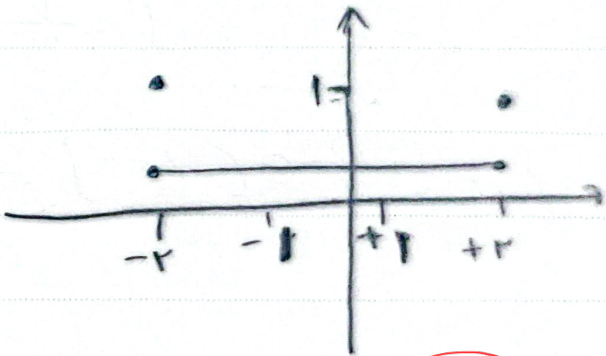
الف) $y = [|x| - 1] \quad x \in [-2, 2]$





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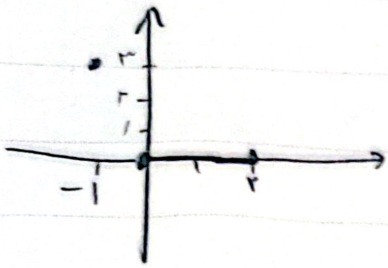
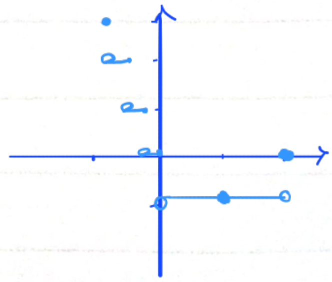
Sub:

$e)\ y=[x^{۲}-۲x] \qquad x\in[-۱,۲]$





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$a+[b]=۴{,}۲ \Rightarrow a=۴{,}۲-[b]$

$b-[a]=۲{,}۴ \Rightarrow b=۲{,}۴+[a]$

$\Rightarrow b=۲{,}۴+[۴{,}۲-[b]]$

$\Rightarrow a=۱{,}۲\ ,\ b=۳{,}۴ \Rightarrow a+b=۱{,}۲+۳{,}۴=۴{,}۶$

۱۰

$(۱+\sqrt{۲})^{۶}+(۱-\sqrt{۲})^{۶}=۱۹۸$

$\Rightarrow (۱+\sqrt{۲})^{۶}=[۱۹۸-(۱-\sqrt{۲})^{۶}] \Rightarrow \ =\boxed{۱۹۷}$