

موضوع: الفيزياء (الفصل الأول) - الميكانيكا الكلاسيكية

التمرين 19

سؤال 1
سؤال 2

$$f(n) \Rightarrow an + b$$

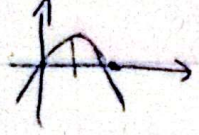
$$f(n+1) + f(n-1) = 2n + f(n) \Rightarrow a(n+1) + b + a(n-1) + b = 2n + an + b$$

$$2n + a(n) + b \Rightarrow 2n + a + b + an + a + b = 2n + 2a + b$$

$$\Rightarrow a(2a + a) + 2a + b = 2n + 2a \quad \bullet \quad 2a = 2 \Rightarrow a = 1$$

$$b = 0$$

$$f(n) = an + b = n \rightarrow y = \sqrt{f(n) - n^2} = \sqrt{n - n^2}$$



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

$$\sqrt{(-\infty, \frac{1}{2}]} \Rightarrow R = \left[-\frac{1}{2}, \frac{1}{2}\right]$$

$$f(n) = \frac{n^2 - \varepsilon n}{n + \varepsilon}$$

$$D_f = \mathbb{R} - \{a, b\} \quad \varepsilon$$

$$R_f = [0, +\infty) - \frac{\varepsilon}{n} \rightarrow \text{رسم خارج}$$

سؤال 1
سؤال 2

$$f(n) = \frac{n(n^2 - \varepsilon)}{n + \varepsilon} = \frac{n(n - \varepsilon)(n + \varepsilon)}{n + \varepsilon} \Rightarrow f(n) = n(n - \varepsilon) \Rightarrow D_f =$$

$$R_f = [0, +\infty) - \{1\} \Rightarrow n(n - \varepsilon) \neq 1 \Rightarrow n^2 - \varepsilon n - 1 \neq 0 \Rightarrow (n + \varepsilon)(n - \varepsilon)$$

$$\Rightarrow n \neq -\varepsilon, n \neq \varepsilon \Rightarrow \left. \begin{matrix} a = -\varepsilon \\ b = \varepsilon \end{matrix} \right\}$$

$$n^2 - \varepsilon n \rightarrow \frac{-b}{2a} = \frac{-(\varepsilon - \varepsilon)}{2} = 1 \rightarrow f(1) = -1$$

$$R_f = [-1, +\infty) - \{1\} \Rightarrow \left. \begin{matrix} a = -1 \\ b = 1 \end{matrix} \right\}$$

$$f\left(\frac{a+b}{2}\right) = f\left(\frac{\varepsilon - \varepsilon}{2(1-1)}\right) = f(-1) = n^2 - \varepsilon n = (-1)^2 - \varepsilon(-1) = 1 + \varepsilon = 3$$

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$a = -4$
 $b = 17$

$$\sqrt{n^2 + an^2 + bn - 1} = cn + d$$

$$\sqrt{(n-1)^2} \Rightarrow n-1 \Rightarrow \text{d'après} \Rightarrow \sqrt{n^2 - 4n^2 + 17n - 1} \Rightarrow a = -4, b = 17$$

$$D_f = [-4, 17] \quad R_f = [-1, 1])$$

$$-4 - 1 = -1 \Rightarrow \min$$

$$17 - 1 = 16 \Rightarrow \max$$

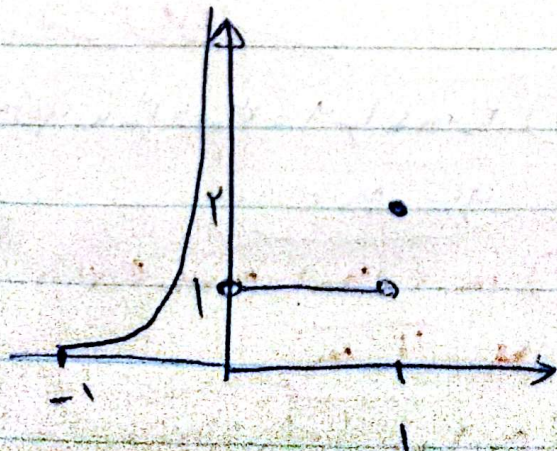
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$$y_1 = \left(\frac{n+1}{1-n} \right)^{\frac{1}{n}} \rightarrow \left(\frac{n+1}{1-n} \right) > 0 \quad -\frac{1}{a} + \frac{1}{b} \Rightarrow D_f = [-1, 1)$$

$$y_1 = \frac{an^2 - 1}{n^2 + b} \quad \left. \begin{array}{l} \xrightarrow{\min} n=0 \Rightarrow R = -\frac{1}{b} \\ \xrightarrow{\max} n=\infty \Rightarrow R = a \end{array} \right\} \left[-\frac{1}{b}, a \right] = [-1, 1) \Rightarrow a=1, b=1$$

$$a+b=2$$

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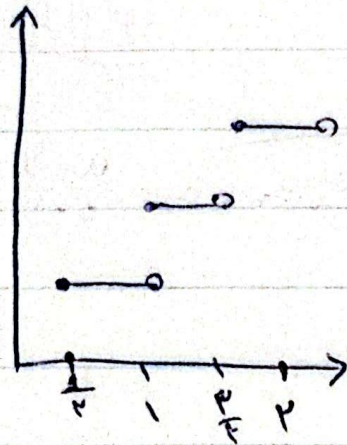


$$\frac{[x]}{x} + \frac{|x|}{x}$$

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

$$-1 \leq x < 0 \Rightarrow [x] = -1 \Rightarrow \frac{-1}{x} - 1$$

$$x=1 \Rightarrow [x]=1 \Rightarrow 1+1=2$$



سوال 4) (محل)

$$\frac{1}{F} \leq n < 1 \quad \begin{matrix} \lfloor n \rfloor = 0 \\ \lfloor n + \frac{1}{F} \rfloor = 1 \end{matrix} \quad 0 + 1 = 1 \quad (P)$$

$$1 \leq n < \frac{P}{F} \quad \begin{matrix} \lfloor n \rfloor = 1 \\ \lfloor n + \frac{1}{F} \rfloor = 1 \end{matrix} \quad 1 + 1 = 2$$

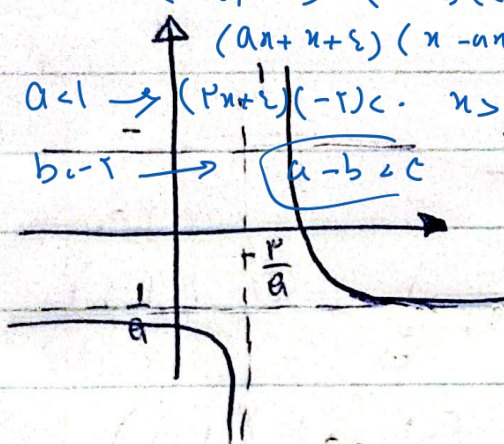
$$\frac{P}{F} \leq n < 2 \quad \begin{matrix} \lfloor n \rfloor = 1 \\ \lfloor n + \frac{1}{F} \rfloor = 2 \end{matrix} \quad 1 + 2 = 3$$

$$|c| < |d| \rightarrow (c-d)(c+d) < 0$$

$$(a+n+r)(n-an-r) < 0$$

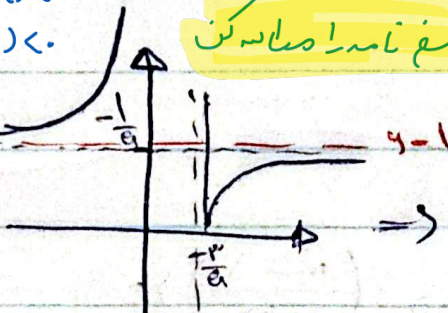
$$a < 1 \rightarrow (r+n+r)(-r) < 0 \quad n > -r$$

$$b < r \rightarrow (a-b) < c$$



پایه نامساوی

سوال 5) (محل)



$$\Rightarrow a < 0$$

$$-\frac{1}{a} = 1 \Rightarrow a = -1$$

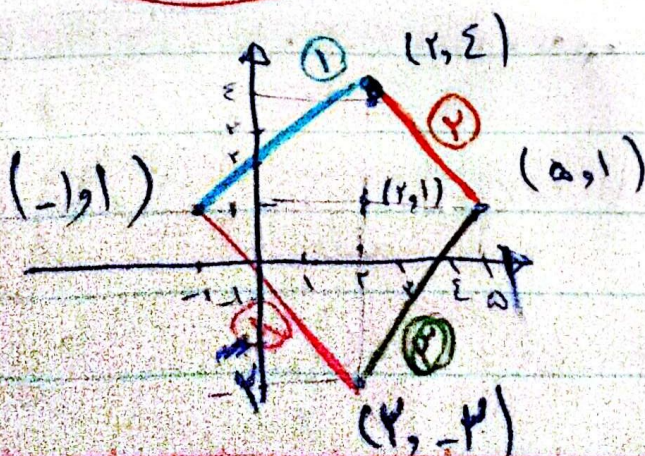
$$\left| \frac{n+1}{an+r} \right|$$

$$\frac{n+1}{an+r} = 1 \Rightarrow n+1 = -n+r \Rightarrow 2n=r$$

$$\Rightarrow n=1 \Rightarrow b=1$$

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

سوال 6) (محل)



$$1) \quad r-n+y-1=r \Rightarrow y+n=r$$

$$y=n+r$$

$$2) \quad n-r+y-1=n+y-r=r$$

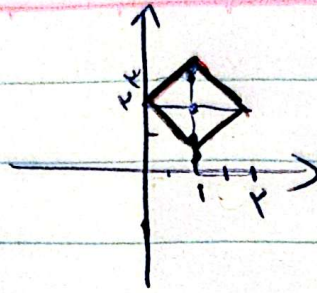
$$y=4-n$$

$$3) \quad a-r+1-y=r \Rightarrow a-y=r$$

$$y=n-r$$

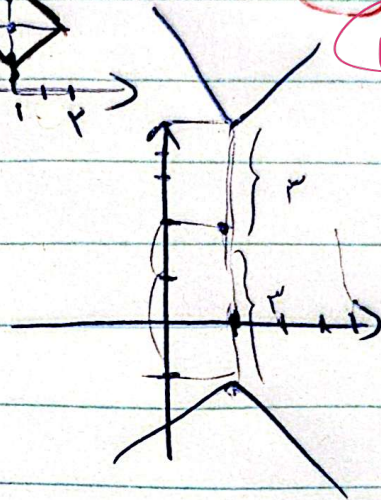
$$4) \quad r-n+1-y=r \Rightarrow y=-n$$

الف $|x-1| + |y-2| = 1$



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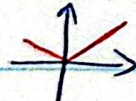
ب) $|x-1| - |y-2| = -3$
 $|y-2| - |x-1| = 3$



نویس

اطلا $y = 3x + 1$ $\Rightarrow -3 < a < 3$

این صفت است پس چون اگر استیجی نزدیکتر از سه باشد مثلاً ۵



همه ی مقادیر آن نزدیکتر از مقدر می باشد
و اگر ۹ برابر سه باشد همه مقادیر نزدیکتر مابقی مقدر خواهند بود
در نتیجه باید مقادیری که این صفت سه (مابقی خود) را ببرد