

$$\frac{\sqrt{2} + \sqrt{5}}{\sqrt{2}(\sqrt{2} + \sqrt{5})} \times \left[ \sqrt{\frac{2+2}{2}} - \sqrt{\frac{2-2}{2}} - \left( \sqrt{\frac{2+2}{2}} + \sqrt{\frac{2-2}{2}} \right) \right]$$

101

$$\frac{1}{\sqrt{2}} \times (-\sqrt{2}) = -1$$

بازگشت به اصل  $\sqrt{a \pm \sqrt{b}} = \sqrt{\frac{a + \sqrt{a^2 - b}}{2}} \pm \sqrt{\frac{a - \sqrt{a^2 - b}}{2}}$

$$a_n = an^2 + bn + c$$

102

$$a_0 = 14 \Rightarrow \begin{cases} 2a + 0b + c = 14 \\ 4a + 0b + c = 14 \end{cases} \Rightarrow 2a + 1b = 14 \Rightarrow 14a + b = 14$$

$$a_1 = 14 \Rightarrow \begin{cases} 1a + 1b + c = 14 \\ 4a + 0b + c = 14 \end{cases}$$

$$a = \frac{1}{1} (-a_0) = \frac{1}{1} (-14) = -14 = -\frac{1}{2} \xrightarrow{14a + b = 14}$$

$$14(-\frac{1}{2}) + b = 14 \Rightarrow b = 14 + 7 = 21 \xrightarrow{2a + 0b + c = 14}$$

$$2(-\frac{1}{2}) + 0 + c = 14 \Rightarrow -1 + c = 14 \Rightarrow c = 14 - 1 = 13$$

$$a_n = -\frac{1}{2}n^2 + 21n - 1$$

$$a_1 = -\frac{1}{2} + 21 - 1 = 19\frac{1}{2} = 19\frac{1}{2}$$

$$a_{10} = -\frac{1}{2}(10)^2 + 21(10) - 1 = 100 - 1 = 99 \Rightarrow \frac{a_{10}}{a_1} = \frac{99}{19\frac{1}{2}} = \frac{99}{\frac{39}{2}} = \frac{198}{39} = \frac{66}{13} = 5$$

$$S = \left( x = -\frac{b}{2a}, y = -\frac{\Delta}{4a} \right) \text{ } \begin{matrix} \text{نقطه} \\ \text{سراسر} \end{matrix}$$

103

$$y_1 = -ax^2 + ax + 2 \quad S_1 \left( \frac{1}{2}, \frac{a}{2} + 2 \right)$$

$$y_2 = 2bx^2 - bx - 1 \quad S_2 \left( \frac{1}{2}, -\frac{b}{2} - 1 \right)$$

$$\begin{aligned} \hookrightarrow \frac{a}{2} + 2 &= 2b \left( \frac{1}{2} \right)^2 - b \left( \frac{1}{2} \right) - 1 \Rightarrow \frac{a}{2} + 2 = -1 \Rightarrow \frac{a}{2} = -3 \Rightarrow a = -6 \\ -\frac{b}{2} - 1 &= 2 \left( \frac{1}{2} \right)^2 - 2 \left( \frac{1}{2} \right) + 2 \Rightarrow -\frac{b}{2} = -\frac{1}{2} + 1 \Rightarrow b = -1 \left( \frac{1}{2} \right) = -\frac{1}{2} \Rightarrow b - a = 5.5 \end{aligned}$$

$$\frac{1-2x}{3+1} = -2 \Rightarrow 1-2x = -2x-2 \Rightarrow x=2$$

$$\frac{1-2x}{3+1} = 0 \Rightarrow 1-2x = 0 \Rightarrow x = \frac{1}{2}$$

$$\frac{1}{4} < \frac{3}{4} < \frac{1}{2} \Rightarrow \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 2 \\ \frac{1}{2} \end{bmatrix}$$

د. تابع مرتب ضرب  $x$  و  $x^2$  ضرب  $a$  و  $a^2$  و  $b$  و  $b^2$  و  $c$  و  $c^2$

$$f(x) = abx - ax^2 + 2b - 2x - vx^2 = -(a+v)x^2 + (ab-2)x + 2b$$

$$a+v=0 \Rightarrow a=-v$$

$$ab-2=0 \Rightarrow -vb=2 \Rightarrow b = -\frac{2}{v}$$

$$S_0 = b^2 = 2b = 2\left(-\frac{2}{v}\right) = -\frac{4}{v}$$

$$\textcircled{1} \rightarrow \frac{1}{x-1} \textcircled{2} \rightarrow \frac{-1}{x-1} \textcircled{3} \rightarrow \frac{-1}{x-1} - 2$$

$$\frac{-1}{x-1} - 2 = \frac{1}{x} \Rightarrow \left(\frac{1}{x} + \frac{1}{x-1} = -2\right) \times x(x-1)$$

$$x-1+x = -2x^2+2x \Rightarrow 2x^2=1 \Rightarrow x^2 = \frac{1}{2} \Rightarrow x = \pm \frac{1}{\sqrt{2}}$$

$$y = \frac{1}{x} = \frac{1}{\pm \frac{1}{\sqrt{2}}} = \pm \sqrt{2} \quad A \left| \frac{1}{\sqrt{2}} \right. \quad B \left| \frac{-1}{-\sqrt{2}} \right.$$

$$OA = \sqrt{\left(\frac{1}{\sqrt{2}}\right)^2 + \sqrt{2}^2} = OB = \sqrt{\frac{1}{2} + 2} = \sqrt{\frac{5}{2}} = \frac{\sqrt{10}}{2}$$

$$P = \frac{c}{a} \Rightarrow a+b-1=ab \Rightarrow a-1=ab-b=b(a-1) \Rightarrow b = \frac{a-1}{a-1} = 1$$

$$S = -\frac{b}{a} \Rightarrow a^2 + b^2 - 12 = a + b \xrightarrow{b=1} a^2 + 1 - 12 = a + 1$$

$$a^2 - a - 12 = 0 \Rightarrow (a-4)(a+3) = 0 \Rightarrow \begin{cases} a=4 & \text{و. و. } \in \mathbb{N} \\ a=-3 & \text{و. و. } \notin \mathbb{N} \end{cases}$$

$$a+b = 4+1 = 5$$

$$\sqrt{t-2} = t \Rightarrow \frac{1}{t+2} + \frac{1}{t-2} = \frac{t}{5}$$

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$$\frac{t-2+t+2}{(t+2)(t-2)} = \frac{t}{5} \Rightarrow t^2 - 4 = 10 \Rightarrow t - 2 = 4 \Rightarrow t = 6$$

فقط یک ریشه منفی دارد

منطق تابع ۲ ر ۲ دارد پس تابع یک به یک نیست و وارون پذیر

۱۰۹

منطق (سوال عکس است)   
 منظر رطوع سوال این جور جای   
 کن و در تابع قرار بده هر کدام   
 مبدق کرد جواب است

$$(-2, 9) \Rightarrow 9 = -3(-2)^3 + 2(-2) - 11 \Rightarrow 9 = 24 - 4 - 11 = 9 = 9$$

عزیزه طرأع سوال = یک

$$g(0) = g(2) = 3$$

۱۱۰

$f(-2)$  (جوخ)  $f(0) = -2$  مقدار  $g$  مستقیم نسبت باید معادله خط را بنویسد

به نقاط  $A(0, 2)$  و  $B(-3, 0)$  بنویسد   
  $m = \frac{0-2}{-3-0} = \frac{2}{3} \Rightarrow y = \frac{2}{3}x - 2$    
  $\frac{2}{3}x - 2 = 1 \Rightarrow x = \frac{9}{2}$

$g(\frac{9}{2})$  مستقیم نسبت باید معادله خطش را بنویسد به نقاط  $A(0, 2)$

و  $B(2, 0)$  بنویسد   
  $m' = \frac{0-2}{2-0} = -1 \Rightarrow g = -x + 2$

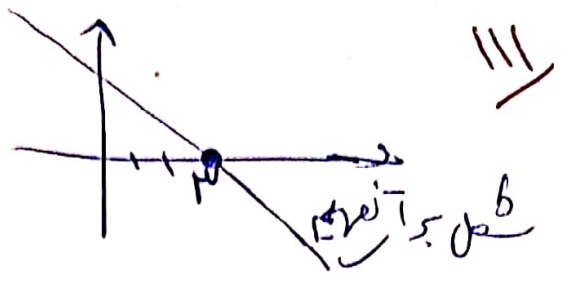
$$g(\frac{9}{2}) = -\frac{9}{2} + 2 = \frac{5}{2}$$

$$g \circ f'(-2) \times g(0) = \frac{5}{2} \times 3 = 15$$

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$$a^2 f'(m) = 0$$

$$a = 0, 1, 2, 3$$



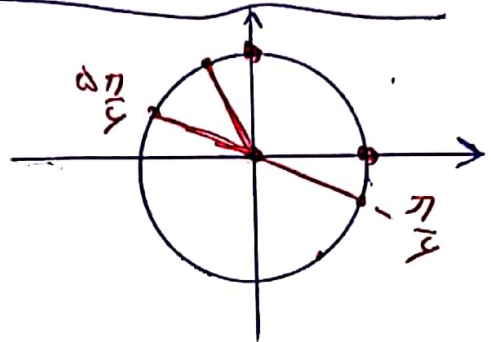
$$-\frac{\pi}{4} < x < \frac{\pi}{4}$$

$$\sin\left(\frac{\pi}{4}\right) = \frac{1}{\sqrt{2}} \rightarrow \text{Min}$$

$$\sin 0 = 0$$

$$\sin\left(\frac{\pi}{4}\right) = \frac{1}{\sqrt{2}} \rightarrow \text{Max}$$

$$\sin\left(\frac{\pi}{4}\right) = \sin\left(\pi - \frac{\pi}{4}\right) = \sin\left(\frac{3\pi}{4}\right) = \frac{1}{\sqrt{2}}$$



$$-\frac{1}{\sqrt{2}} \left( \sin x \right) \Rightarrow -\frac{1}{\sqrt{2}} \frac{m-1}{\sqrt{2}} \Rightarrow -\frac{1}{2} (m-1)$$

$$\Rightarrow -1 < m < 1$$

$$\left( \sin \alpha + \cos \alpha \right)^2 = \left( \frac{\sqrt{2}}{2} \right)^2 = \left( \frac{1}{\sqrt{2}} \right)^2$$

$$1 + \sin 2\alpha = \frac{1}{2} \Rightarrow \sin 2\alpha = \frac{1}{2}$$

$$\sin 2\alpha = \frac{\tan 2\alpha}{1 + \tan^2 \alpha} = \frac{1}{2} \Rightarrow \tan 2\alpha - 1 \cdot \tan \alpha + \frac{1}{2} = 0$$

$$\tan 2\alpha - \tan \alpha + \frac{1}{2} = 0 \Rightarrow \tan \alpha = \frac{1 \pm \sqrt{1-2}}{2} \Rightarrow \begin{cases} \frac{1+1}{2} = 1 \\ \frac{1-1}{2} = 0 \end{cases}$$

$$C = \frac{y_{\min} + y_{\max}}{2} = \frac{-\frac{1}{\sqrt{2}} + \frac{1}{\sqrt{2}}}{2} = \frac{0}{2} = 0$$

عقدار  $\alpha$  و  $\beta$  در  $\frac{\pi}{4}$  و  $\frac{3\pi}{4}$  قرار می‌گیرد

$$C + |a| = \frac{1}{\sqrt{2}} \Rightarrow 1 + |a| = \frac{1}{\sqrt{2}} \Rightarrow |a| = \frac{1}{\sqrt{2}} - 1 \Rightarrow a = \pm \left( \frac{1}{\sqrt{2}} - 1 \right) \Rightarrow aC = 1 \times \left( \frac{1}{\sqrt{2}} - 1 \right) = \frac{1}{\sqrt{2}} - 1$$

$$\sin\left(\alpha + \frac{\pi}{4}\right) \cos\left(\frac{\pi}{4} - \alpha\right) = 1 \quad \text{113}$$

$$\alpha + \frac{\pi}{4} + \frac{\pi}{4} - \alpha = \frac{\pi}{2} \quad \left( \text{چون } \alpha + \beta = \frac{\pi}{2} \Rightarrow \sin \alpha = \cos \beta \right)$$

$$\sin\left(\alpha + \frac{\pi}{4}\right) \sin\left(\alpha + \frac{\pi}{4}\right) = 1 \Rightarrow \sin\left(\alpha + \frac{\pi}{4}\right) = \pm 1$$

$$\sin\left(\alpha + \frac{\pi}{4}\right) = \pm 1$$

در [۰, ۲π] یکبار برابر +1 و یکبار برابر -1 داریم

$$\log_{\frac{1}{2}} b = \log_{\frac{1}{2^2}} b = \frac{1}{2} \log_{\frac{1}{2}} b = \frac{2}{3} (1+a) \Rightarrow \log_{\frac{1}{2}} b = 2(1+a) = 2 + 2 \log_{\frac{1}{2}} 2 \quad \text{114}$$

$$\log_{\frac{1}{2}} b = \log_{\frac{1}{2}} 4 + \log_{\frac{1}{2}} 2 = \log_{\frac{1}{2}} 8 \Rightarrow b = 8$$

$$\log_{\frac{1}{2}} b - N = \log_{\frac{1}{2}} [2(8-1)] = \log_{\frac{1}{2}} (14-1) = \log_{\frac{1}{2}} 13 = \log_{\frac{1}{2}} 16 = \log_{\frac{1}{2}} 2^4 = 4$$

$$\left(\frac{1}{2}\right)^a \Rightarrow 1 = 2^{\frac{a}{2} + b} \Rightarrow 2^{\frac{a}{2} + b} = 1 \Rightarrow \frac{a}{2} + b = 0 \Rightarrow a = -2b \quad \text{115}$$

$$f'(1) = 5 \Rightarrow f(5) = 1 \Rightarrow 1 = 2^{5a + b} \Rightarrow 5a + b = 0$$

$$5(-2b) + b = -9b = 9 \Rightarrow b = -1 \Rightarrow a = -2b = -2(-1) = 2$$

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

مجموع حاصل جمع اختلاف از میانگین هفتم و یازدهم  
 ۱۲ و ۱۰ و ۸ و ۶ و ۴ و ۲ و ۰ و ۲ و ۴ و ۶ و ۸ و ۱۰ و ۱۲  
 ۱۲ × ۹ = ۱۰۸

$$\begin{cases} a=1 \\ b=2 \end{cases} \Rightarrow 9+1+6+1+0+1 = 18 \neq 108$$

$$\begin{cases} a=2 \\ b=-3 \end{cases} \Rightarrow 9+1+9+1+0+2 = 22 \neq 108$$

$n\bar{x}_1 = \sum_{i=1}^n x_i$     صرح  $n$  داده اول  
 $n\bar{x}_2 = \sum_{i=1}^n x_i$     صرح  $n$  داده دوم

$-\bar{x}_1 = \bar{x}_2 - 4 \Rightarrow \bar{x}_1 + \bar{x}_2 = 4$

$$\bar{x} = \frac{n\bar{x}_1 + n\bar{x}_2}{2n} = \frac{n}{n} \left( \frac{\bar{x}_1 + \bar{x}_2}{2} \right) = 1 \times \frac{4}{2} = 2$$

اول کتف برکت و قدر مطلق را در  $x \rightarrow -1^+$  <sup>مستقیم</sup> <sub>کنیم</sub>

$$\lim_{x \rightarrow -1^+} \frac{(x+1)\sqrt{-1}}{x-1} = \frac{0}{0} = 1$$

$$\lim_{x \rightarrow +\infty} \frac{\sqrt{ax}}{x} = \frac{1}{\sqrt{a}} \Rightarrow a = \frac{1}{4}$$

$x \rightarrow -1^- \Rightarrow \frac{1}{x} \rightarrow -1^+ \Rightarrow \left[ \frac{1}{x} \right] = -1$

$$\lim_{x \rightarrow -1^-} \left[ \frac{1}{x} \right] f(x) = -1 \times \sqrt{\frac{1}{4}(-1)^2 + (-1) + 1} = -1 \times \frac{1}{2} = -\frac{1}{2}$$

$f(1) = \frac{1\sqrt{1}}{1+1-1} = \frac{1}{1} \Rightarrow \lim_{x \rightarrow 1} \frac{f(x)-1}{x-1} = \frac{f(1)-1}{1-1} = \frac{0}{0} \xrightarrow{\text{HOP}}$

$$\lim_{x \rightarrow 1} \frac{f'(x)}{1} = f'(1)$$

$$f'(x) = \frac{\frac{1}{2}x^{-1/2} - (x+1)(1/\sqrt{1})}{[x(x+1)]^2} = \frac{\frac{1}{2} - 2}{4} = -\frac{1}{4}$$

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۱۲۳  
 ۱۲۳  
 ۱۲۳  
 $f'(1) = 2$  سے

$$f(1) = \frac{1+a}{a(1)+1} = \frac{a+1}{a+1} = 1$$

$$1 = r(1) + b \Rightarrow b = -1$$

$$f'(x) = \frac{1(x) - a^2}{(a(x)+1)^2} \Rightarrow \frac{1-a^2}{(a+1)^2} = 2$$

$$\frac{(1-a)(1+a)}{(a+1)(a+1)} = 2 \Rightarrow \frac{1-a}{1+a} = 2 \Rightarrow 2+2a = 1-a$$

$$3a = -1 \Rightarrow a = -\frac{1}{3}$$

۱۲۴  
 $a-b = -\frac{1}{3} + 1 = \frac{2}{3}$

۱۲۴  
 دو خطوں کے انٹر سیکشن سے دو نقطوں کے وسطی نقطہ پر

$$f(x) = 3x^2 + 2ax - 1 = 0$$

$$x=0 \Rightarrow 0 + 0 - 1 = 0 \Rightarrow b = 0$$

$$x=-2 \Rightarrow 12 - 4a - 1 = 0 \Rightarrow a = 2$$

$$y = 3x^2 + 2ax - 1$$

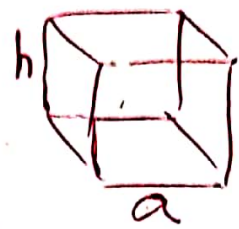
$$x=0 \Rightarrow y = 0 + 0 - 1 = -1$$

$$x=-2 \Rightarrow y = 3(-2)^2 + 2(-2) - 1 = 12 - 4 - 1 = 7$$

$$A \begin{vmatrix} 0 \\ -1 \end{vmatrix} \quad B \begin{vmatrix} -2 \\ 7 \end{vmatrix} \Rightarrow AB = \sqrt{2^2 + 7^2} = \sqrt{53} = 2\sqrt{13}$$

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$$V = \text{مساحت قاع} \times \text{ارتفاع} = a^2 h = F \Rightarrow h = \frac{F}{a^2}$$



۱۲۵

$$S = \text{مساحت جانب} = a^2 + 2ah = a^2 + 2a \left( \frac{F}{a^2} \right) = a^2 + \frac{2F}{a}$$

$$S = a^2 + \frac{2F}{a} = a^2 + \frac{2 \times 17}{a} = a^2 + \frac{34}{a}$$

$$S' = 2a - \frac{34}{a^2} = 0 \Rightarrow 2a = \frac{34}{a^2} \Rightarrow a^3 = 17 \Rightarrow a = \sqrt[3]{17}$$

$$h = \frac{F}{a^2} = \frac{17}{(\sqrt[3]{17})^2} = 1$$

$$S = a^2 + 2ah = (\sqrt[3]{17})^2 + 2(\sqrt[3]{17})(1) = \sqrt[3]{17} + 1 = 1\sqrt[3]{17}$$

۱۲۶

$$a) \text{ } \text{جواب} : RRARAR \Rightarrow 1! \cdot 2! = 2 \times 1 = 2$$

$$b) \text{ } \text{جواب} : RARARR \Rightarrow 1! \cdot 2! = 1 \times 2 \times 1 \times 2 \times 1 = 2 \times 2 = 4$$

$$2 + 4 = 6$$

۱۲۷

$$\begin{matrix} (3-3)-(1-1) \\ \swarrow \\ \frac{1}{3} \Rightarrow (3-3-1) \Rightarrow \frac{1}{1} \end{matrix}$$

$$\begin{matrix} (1-3)-(3-1) \\ \swarrow \\ \begin{matrix} 1-3 \Rightarrow (1-3-3) - (3-1-1-3) \Rightarrow 1 \times \frac{1}{12} \\ \frac{1}{3} \\ 3-1 \Rightarrow (1-3-3) - (3-1-3-1) \Rightarrow 1 \times \frac{1}{12} \\ 3-3 \end{matrix} \end{matrix}$$

$$\frac{1}{1} + \frac{1}{12} + \frac{1}{12} = \frac{13}{12}$$

۱۲۸

مساحت جانب BC برابر طول A از نقطه A

$$BC \text{ } \text{جواب} \Rightarrow m_{BC} = \frac{11-3}{3-3} = \frac{8}{0} = \infty \Rightarrow y = 2x - 3 \Rightarrow 2m - y - 3 = 0$$

$$A \text{ } \text{جواب} \Rightarrow AH = \frac{|2(1) + 9(-1) - 3|}{\sqrt{2^2 + 9^2}} = \frac{10}{\sqrt{85}} = \frac{10\sqrt{85}}{85} = 2\sqrt{85}$$



۱۲۹ در دو مثلث  $BDE$  و  $CDE$  قاعدهها یعنی  $DE$  و ارتفاع  $h$  (فاصله بین دو خط موازی) با هم برابرند

$$S_{BDE} = S_{CDE} \Rightarrow \frac{S_{CDE}}{S_{BDE}} = 1 \quad \text{رشته}$$

۱۳۰

$$(x-1)^2 + (y+1)^2 - 4 = 0 \Rightarrow (x-2)^2 + (y+1)^2 = 4$$

$$C \begin{pmatrix} 2 \\ -1 \end{pmatrix} \quad R = \sqrt{4}$$

$$x^2 + (y-1)^2 - 1 = 4 \Rightarrow x^2 + (y-1)^2 = 5$$

$$C' = \begin{pmatrix} 0 \\ 1 \end{pmatrix} \quad R' = \sqrt{5}$$

$$d = CC' = \sqrt{2^2 + (1+1)^2} = 2\sqrt{2}$$

$$R - R' < d < R + R'$$

$$2, 2 - 1, 1 < 2(1, 2) < 2, 2 + 1, 1$$

$$0, 5 < 2, 1 < 3, 9$$

دو دایره متقاطع هستند

@Aaazzii

موفق باشید!