

1.1 گزشتہ
 $ab = \frac{1}{\sqrt{2}} x - \sqrt{2} = (-1)$

$(\frac{\sqrt{2} + \sqrt{5}}{\sqrt{10} + 2}) (\sqrt{3 - \sqrt{5}} - \sqrt{3 + \sqrt{5}})$
 a b < .

$a = \frac{\sqrt{2} + \sqrt{5}}{\sqrt{2}(\sqrt{5} + \sqrt{2})} (\frac{1}{\sqrt{2}})$, $b^2 = (3 - \sqrt{5}) + (3 + \sqrt{5}) - 2\sqrt{9 - 5} =$

$9 - 4 = 5 \rightarrow b^2 = 5 \rightarrow b = \pm\sqrt{5}$

مقدار مثبت غرق
 $b = -\sqrt{5}$

$d_n = an^2 + bn + c$

1.2 گ

$d_5 = 14 \rightarrow 25a + 5b + c = 14$

$d_7 = 17 \rightarrow 49a + 7b + c = 17$

$a = -\frac{1}{5} \rightarrow \begin{cases} -7 + 5b + c = 14 \\ -9 + 7b + c = 17 \end{cases} \rightarrow$

فرض سوال $\rightarrow a = \frac{1 - 14}{5} = -\frac{1}{5}$

$\begin{cases} 5b + c = 19 \\ 7b + c = 26 \end{cases} \rightarrow \begin{matrix} b = 4 \\ c = -1 \end{matrix}$

$\frac{d_{15}}{d_1} = ? \rightarrow \frac{225a + 15b + c}{a + b + c} = \frac{-45 + 60 - 1}{-1 + 4 - 1} = \frac{14}{2} = 7$

متوسط و پرچاسپ

$y_1 = -ax^2 + ax + 2 \rightarrow S(\frac{1}{4}, \frac{a}{4} + 2) \rightarrow y_1 = 12x^2 - 12x + 2$ 1.3

$y_2 = 4bx^2 - bx - 1 \rightarrow S(\frac{1}{4}, -\frac{b}{4} - 1)$

y_2 در $S \rightarrow 4b(\frac{1}{4}) - b(\frac{1}{4}) - 1 = \frac{a}{4} + 2 \rightarrow \frac{a}{4} = -3 \rightarrow a = -12$

y_1 در $S \rightarrow 12(\frac{1}{4}) - 12(\frac{1}{4}) + 2 = -\frac{b}{4} - 1 \rightarrow \frac{1}{4} = -\frac{b}{4} - 1 \rightarrow$

$\frac{b}{4} = -1 + \frac{1}{4} \rightarrow \frac{b}{4} = -\frac{3}{4} \rightarrow b = -3$

$b - a = -3 - (-12) = 9$

سخت و پرچاسپ

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

دوستان

(I) $-2 < \frac{1-3x}{x+1} \rightarrow \frac{1-3x}{x+1} + 2 > 0 \rightarrow \frac{-2x+3}{x+1} > 0 \rightarrow (-1, 3)$

(II) $\frac{1-3x}{x+1} < 0 \rightarrow (-\infty, -1) \cup (\frac{1}{3}, +\infty)$ $(I) \cap (II) \rightarrow (\frac{1}{3}, 3)$

$\frac{1}{3} < x < 3 \rightarrow \frac{1}{3} < \frac{x}{3} < 1 \rightarrow [\frac{x}{3}] = 0, [\frac{x}{3}] = 1$ دوستان

$P(x) = abx - ax^2 + 2b - 2x - 7x^2 = (a-7)x^2 + (ab-2)x + 2b - 1.5$

تابع ثابت $\rightarrow a = -7, b = -\frac{2}{7} \rightarrow P(x) = 2b = -\frac{4}{7}$ دوستان

$P(x) = \frac{1}{x} \rightarrow \frac{1}{x-1} \rightarrow \frac{-1}{x-1} - 2$ (۴) دوستان - ۱.۶

$\frac{-1}{x-1} - 2 = \frac{1}{x} \rightarrow$ رابطه‌ی تابع جدید

$\frac{1}{x} + \frac{1}{x-1} = -2 \rightarrow \frac{2x-1}{x^2-x} = -2 \rightarrow 2x-1 = -2x^2+2x \rightarrow x^2 = \frac{1}{2} \rightarrow x = \frac{\sqrt{2}}{2}, y = \sqrt{2}$
 $x = -\frac{\sqrt{2}}{2}, y = -\sqrt{2}$

$d = \sqrt{(\frac{\sqrt{2}}{2} - (-\frac{\sqrt{2}}{2}))^2 + (\sqrt{2} - (-\sqrt{2}))^2} = 1$ نامنه از مبدأ مختصات

$d = \sqrt{\frac{1}{2} + 2} = \frac{\sqrt{5}}{\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{10}}{2}$ دوستان

$x^2 - (a^2 + b^2 - 12)x + a + b - 1 = 0$ a, b و a, b برابری

$S = a + b = a^2 + b^2 - 12 \rightarrow a + b = (a+b)^2 - 2ab - 12 \xrightarrow{ab = a+b-1}$ دوستان

$P = ab = a + b - 1$
 $(a+b)^2 - 2(a+b-1) - (a+b) - 12 = 0$

$\rightarrow (a+b)^2 - 3(a+b) - 11 = 0 \xrightarrow{a+b=x} x^2 - 3x - 11 = 0 \rightarrow x = 5 \rightarrow a+b=5$
 $x = -2$ دوستان

$\sqrt{2-x} = a$

$\frac{1}{a+2} - \frac{1}{2-a} = \frac{0}{5} \rightarrow \frac{2-a-2-a}{2-a^2} = \frac{a}{5} \rightarrow \frac{-2a}{2-a^2} = \frac{a}{5}$

$\frac{a \neq 0}{\sqrt{2-x} \neq 0} \rightarrow \frac{-2}{2-a^2} = \frac{1}{5} \rightarrow 2-a^2 = -1 \rightarrow 2-(2-x) = -1 \rightarrow 2+x = -1 \rightarrow x = -1$

چون بیشتر مخرج است

ع و ق

$(a, b) \in F \quad y = -3x^3 + 2x - 11 \quad \text{ساده} \quad 1.9$

$(b, a) \in F \xrightarrow{x=-2} y = -3(-2)^3 + 2(-2) - 11 = 9 \rightarrow (9, -2) \checkmark$

$f(x) = 1.5x - 3 \quad (\text{معادله خط را از دو نقطه داده شده}) \quad 11$

بر روی نمودار ببینست حتی آوریم

$f^{-1}(2) = ? \rightarrow f(?) = 2 \rightarrow 1.5x - 3 = 2 \rightarrow x = \frac{10}{3} \rightarrow f^{-1}(2) = \frac{10}{3}$

$g(x) = \begin{cases} 2x-1 & x \geq 1 \\ -x+2 & x < 1 \end{cases} \quad g\left(\frac{10}{3}\right) = \frac{10}{3}$
 $g(0) = 2 \rightarrow g^{-1}(2) = 0$

$g \circ f^{-1}(2) = g\left(\frac{10}{3}\right) = \frac{10}{3} \rightarrow \frac{10}{3} \times 3 = 10$

سفت و به حساب

$f \circ g(0) = g(2) = 3$

$x^2 f(x) \geq 0 \rightarrow f(x) \geq 0 \rightarrow f(x) \geq f(3) \rightarrow x \leq 3$
 الیاً نزولی ساده
 $\{0, 1, 2, 3\}$

$-\frac{\pi}{12} < x < \frac{5\pi}{12} \rightarrow -\frac{\pi}{4} < 2x < \frac{5\pi}{4}$
 $\rightarrow -\frac{1}{2} < \frac{m-1}{4} < 1 \rightarrow -2 < m-1 \leq 4 \rightarrow 1 < m \leq 5 \rightarrow (-1, 5]$
 ساده

$$\sin x + \cos x = \frac{r}{\sqrt{a}} \xrightarrow{\text{توان}} 1 + \sin^2 x = \frac{a}{a} \rightarrow \sin^2 x = \frac{a}{a} \quad (117)$$

$$\frac{r + \tan x}{1 + \tan^2 x} = \frac{r}{a} \rightarrow \tan x = \frac{1}{r} \quad \text{و (توان با توان } \tan \text{)}$$

$$\tan x = r \quad (\text{توان})$$

$$|a| + c = \frac{a}{r} \text{ (max)} \rightarrow c = 1$$

$$-|a| + c = -\frac{1}{r} \text{ (min)} \rightarrow ac = -\frac{r}{r}$$

$$x=0 \rightarrow c+a = -\frac{1}{r} \xrightarrow{c=1} a = -\frac{r}{r}$$

$$x + \frac{\pi}{4} = \alpha \rightarrow \alpha - \beta = \frac{\pi}{4} \rightarrow \alpha = \frac{\pi}{4} + \beta \quad (118)$$

$$x - \frac{\pi}{4} = \beta \rightarrow \sin \alpha \cos \beta = 1 \rightarrow \sin(\frac{\pi}{4} + \beta) \cos \beta = 1 \rightarrow \cos \beta = 1$$

نکته: $\cos \beta = \pm 1 \rightarrow \cos(x - \frac{\pi}{4}) = \pm 1$

$$x - \frac{\pi}{4} = 0 \rightarrow x = \frac{\pi}{4}$$

$$x - \frac{\pi}{4} = \pi \rightarrow x = \frac{5\pi}{4}$$

دو جواب

$$\log_b b = \frac{r}{r} (1+a) \rightarrow b = 1 \rightarrow b = r^{1+a} = r_x(r)^r = 119$$

$$\log_r r = a \rightarrow b = r^a = r^a \rightarrow \log(r^a - 1) = \log(1 \cdot 1 - 1) = \log(0) = 0$$

$$r^a = r \rightarrow a = 1$$

$$f(x) = \sqrt[r]{ax+b}$$

$$(\frac{1}{r}, 1) \in f \rightarrow \sqrt[r]{\frac{a}{r} + b} = 1 \rightarrow \frac{a}{r} + b = 1 \rightarrow a = -rb$$

$$(0, N) \in f \rightarrow \sqrt[r]{0 + b} = N \rightarrow \Delta a + b = N \rightarrow -Nb = N \rightarrow b = -1$$

$$r - (-1) = r \rightarrow a = r$$

1562

118

$$a + b + 3 - 1 - 1 + 0 = 0 \rightarrow a + b = -1$$

$$\rightarrow a = 2 \quad (b = -3)$$

$$\frac{9 + 1 + 1 + a^2 + b^2}{4} = 4 \rightarrow \frac{11 + a^2 + b^2}{4} = 4 \rightarrow a^2 + b^2 = 13$$

سوال

1 2 4 5
 $\bar{x} = 1.8$ $\bar{x} = 1.5$

زدن مثال عدد

119 - سوال

$Q_2 = 3$

تعداد شرایط سوال را

درا

$$\bar{x} = \frac{12}{4} = 3$$

3

$$\lim_{x \rightarrow -1^+} \frac{|x+1| + [x]}{x - [-x]} = \frac{x}{x} = 1$$

112 - سوال

(سوال)

$$[-1^+] = -1$$

$$[-(-1^+)] = 0$$

$$\lim_{x \rightarrow +\infty} \frac{f(x)}{x+2} = \frac{1}{2}$$

(سوال)

$$f(x) = \sqrt{ax^2 + x + 1}$$

121 -

$$x \rightarrow +\infty$$

$$\rightarrow \lim_{x \rightarrow +\infty} \frac{\sqrt{ax}}{x} = \frac{1}{2} \rightarrow a = \frac{1}{4} \rightarrow f(x) = \sqrt{\frac{1}{4}x^2 + x + 1}$$

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

$$x \rightarrow (-1)^-$$

$$= \sqrt{\frac{1}{4}}$$

$$\lim_{x \rightarrow 1} \frac{f'(x) - 1}{f(x) - 1} = \frac{1 - 1}{0} = \frac{0}{0}$$

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

$x \rightarrow 1$

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

$$f'(x) = \frac{\frac{3}{2}\sqrt{x}(2x^2+x-1) - x\sqrt{x}(4x+1)}{(2x^2+x-1)^2} \quad (x=1)$$

$$f'(1) = \frac{\frac{3}{2}(2) - 5}{(2)^2} = \frac{3-5}{4} = \frac{-1}{2}$$

$$\frac{1}{2} \lim_{x \rightarrow 1} \frac{f(x) - \frac{1}{2}}{x - 1} = \lim_{x \rightarrow 1} \frac{f(x) - f(1)}{x - 1} = f'(1)$$

(از تعریف مشتق هر صی که آن رفت)

$y = 2x + b \rightarrow m = 2$

$$y = \frac{x+a}{ax+1} \rightarrow y' = \frac{1-a}{(ax+1)^2} \xrightarrow{x=1} y' = m = 2 \rightarrow 2 = \frac{1-a}{(a+1)^2}$$

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

$$y = \frac{x - \frac{1}{3}}{-\frac{1}{3}x + 1} \xrightarrow{x=1} y = -1 \rightarrow (1, -1)$$

$$1 = 2(1) + b \rightarrow b = -1$$

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

* جایگزینی (۱، ۱) در

13 - 1122

$$y' = 2x^2 + 2ax - 2b$$

$$x=0 \rightarrow y'=0 \rightarrow b=0$$

$$\rightarrow y = x^3 + 2x^2 - 2$$

ساده

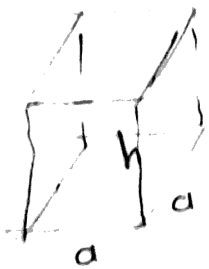
$$x=-2 \rightarrow y'=12-2a=0 \rightarrow a=6$$

$$x=0 \rightarrow y=-2 \rightarrow (0, -2)$$

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

$$x=-2 \rightarrow y=0 \rightarrow (-2, 0)$$

ساده



$$a^2 h = 12 \rightarrow h = \frac{12}{a^2}$$

$$y_{min} = ?$$

13 - 120

$$y = a^2 + 2ah \rightarrow y = a^2 + \frac{24}{a} \rightarrow y' = 2a - \frac{24}{a^2}$$

ساده

$$\rightarrow y'=0 \rightarrow a=2 \rightarrow y = 4 + \frac{12}{2} = 4 + 8 = 12 \rightarrow y_{min} = 12$$

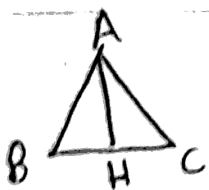
RRAARR

$$2! 4! = 48$$

13 - 124

$$\left(\frac{1}{2} \times \frac{1}{2}\right) + \left(2 \times \frac{1}{4}\right) = \frac{3}{4}$$

13 - 127



$$BC \rightarrow m = \frac{11-3}{2-3} = 2$$

13 - 128

$$y-3 = 2(x-3) \rightarrow y_{BC} = 2x - 3$$

AH برابر است با m ; A(3,1)

$$y - 2x + 3 = 0$$

$$\frac{|9 - 2 + 3|}{\sqrt{5}} = \frac{10}{\sqrt{5}} = \sqrt{20} = 2\sqrt{5}$$

ساده

۱۲۹ - فاعله وارتناع هردر صفت یکی است پس نسبت مساحت آزما (D) است
ک (ساده)

$$x^2 + y^2 - 2y = 2 \rightarrow x^2 + (y-1)^2 = 3 \rightarrow o(0,1) \quad R = \sqrt{3} \approx 1,7 \quad -13.$$

$$x^2 + y^2 + 2y - 4x = 0 \rightarrow (x-2)^2 + (y+1)^2 = 5 \rightarrow o'(2,-1) \quad R' = \sqrt{5} = 2,236$$

$$d = oo' = \sqrt{(2-0)^2 + (-1-1)^2} = 2\sqrt{2} \approx 2,828$$

$$R' - R < d < R' + R \rightarrow 1,48 < 2,828 < 4,036 \quad \checkmark$$

متقاطع
 گزیده