



هم کلاسی  
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$$\sqrt{\frac{1}{GS^2 x}} \left( r \left( \frac{\sqrt{r}}{r} \right)^r - \sin^2 x \right) = \left| \frac{1}{GSx} \right| (1 - \sin^2 x) \quad (F) \text{ نرسنه } (124)$$

$$\pi \langle x \rangle \frac{r}{r} \xrightarrow{GSx} \left( \frac{-1}{GSx} \right) (GS^2 x) = -GSx$$

$$x = vt \rightarrow l_{2..} = (l_{1..} + x) \times t_1, \quad t_2 - t_1 = \Delta \quad (125) \text{ نرسنه } (127)$$

$$l_{2..} = (l_{1..} - x) \times t_2$$

$$\frac{l_{2..}}{l_{1..} - x} - \frac{l_{2..}}{l_{1..} + x} = \Delta \rightarrow x^2 + \epsilon \lambda \cdot x - l_{1..} \Delta = 0$$

$$\rightarrow x = r.$$

$$\frac{rx - r}{x+1} > 1 \rightarrow \frac{rx - r}{x+1} - 1 > 0 \rightarrow \frac{x - \epsilon}{x+1} > 0 \quad (128) \text{ نرسنه } (128)$$

$$\rightarrow x < -1 \cup x > \epsilon$$

$$\frac{rx - r}{x+1} < r \rightarrow \frac{rx - r}{x+1} - r < 0 \rightarrow \frac{-x - 4}{x+1} < 0 \rightarrow x < -4 \cup x > -1 \quad (129)$$

$$128 \cap 129 \rightarrow x < -4 \cup x > \epsilon \Rightarrow \mathbb{R} - [-4, \epsilon]$$

$$\binom{\wedge}{F} + \binom{\wedge}{\omega} + \binom{\wedge}{4} = \frac{\wedge!}{\epsilon! \epsilon!} + \frac{\wedge!}{\omega! \epsilon!} + \frac{\wedge!}{4! \epsilon!} \quad (130) \text{ نرسنه } (129)$$

$$= 16F$$

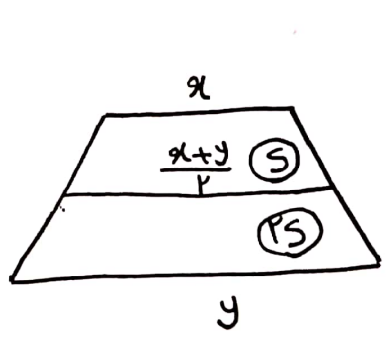
$$\sqrt{ra^2 + fa} = r - ra \xrightarrow{(1) \text{ نرسنه}} ra^2 + \epsilon a = r + ra^2 - ra$$

$$\rightarrow va^2 - 14a + r = 0 \rightarrow a = r \quad \overline{00} \epsilon$$

$$a = \frac{r}{v}$$

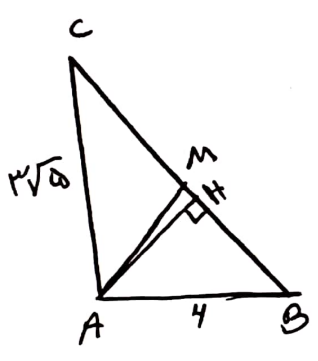
$$\rightarrow \frac{a+1}{a} = 1 + \frac{1}{a} = 1 + \frac{v}{r} = \epsilon / \delta$$

$$(F) \text{ نرسنه } (130)$$



$$\frac{x + \frac{x+y}{2} \times h}{\frac{\frac{x+y}{2} + y}{2} \times h} = \frac{1}{2}$$

$$\rightarrow \frac{2x+y}{2y+x} = \frac{1}{2} \rightarrow \frac{x}{y} = \frac{1}{5}$$

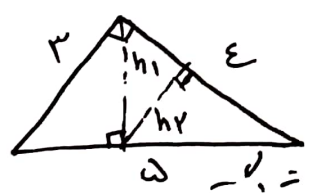


$$BC^2 = 2^2 + 4^2 \rightarrow BC = 9$$

$$S = \frac{AH \times 9}{2} = \frac{4 \times 2\sqrt{5}}{2} \rightarrow AH = 2\sqrt{5}$$

$$MH^2 = \frac{11}{5} - 2 \rightarrow MH = \frac{1}{5}$$

$$\frac{\frac{2\sqrt{5} \times 4}{2}}{\frac{2\sqrt{5} \times \frac{1}{5}}{2}} = 18$$



کمانی مثلثه که موجود در شکل به حالت  
دو زاویه متساوی‌الوجه در مثلث بزرگتر

ضلع بزرگتر مجاور کمان در مثلث بزرگتر

$$\frac{\omega}{\text{وتر مثلث بزرگتر}} = \frac{\epsilon}{\omega} \rightarrow \frac{h_2}{h_1} = \frac{\epsilon}{\omega}$$

$$\sin\left(4\pi - \frac{\pi}{3}\right) \cos\left(\pi - \frac{\pi}{4}\right) + \tan\left(2\pi - \frac{\pi}{4}\right) \left(-\sin\left(\pi - \frac{\pi}{4}\right)\right) \quad (3) \quad 134$$

$$\left(-\sin\frac{\pi}{3}\right) \left(-\cos\frac{\pi}{4}\right) + \left(-\tan\frac{\pi}{4}\right) \left(+\sin\frac{\pi}{4}\right)$$

$$\left(-\frac{\sqrt{3}}{2}\right) \left(-\frac{\sqrt{2}}{2}\right) + (-1) \left(\frac{1}{2}\right) = \frac{\sqrt{3}}{2} - \frac{1}{2} = \frac{\sqrt{3}-1}{2}$$

$$y = a + b \sin\left(x + \frac{\pi}{3}\right) \quad (3) \quad 135$$

$$f(\pi) = -\frac{\sqrt{3}}{2} \rightarrow a + b \sin\left(\pi + \frac{\pi}{3}\right) = -\frac{\sqrt{3}}{2}$$

$$\rightarrow a + b\left(-\frac{\sqrt{3}}{2}\right) = -\frac{\sqrt{3}}{2} \rightarrow 2a - \sqrt{3}b = -\sqrt{3} \quad (1)$$

$$y_{\max} = a + |b| = \sqrt{3} \xrightarrow{b>} a + b = \sqrt{3} \quad (2)$$

$$\begin{cases} 2a - \sqrt{3}b = -\sqrt{3} \\ a + b = \sqrt{3} \end{cases} \rightarrow (-2 - \sqrt{3})b = -\sqrt{3} - 2\sqrt{3}$$

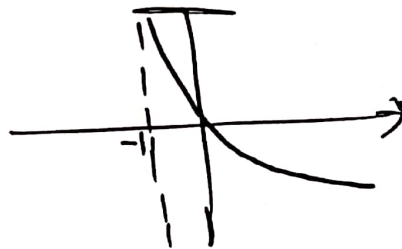
$$\rightarrow b = \frac{\sqrt{3} + 2\sqrt{3}}{-2 - \sqrt{3}} = \frac{\sqrt{3}(\sqrt{3} + 2)}{-2 - \sqrt{3}} = \sqrt{3}$$

$$\left(\frac{r}{\omega}\right)^{2x-1} = \left(\left(\frac{\omega}{r}\right)^r\right)^{2x} = \left(\frac{r}{\omega}\right)^{-2x} \quad (1) \quad 136$$

$$\rightarrow 2x-1 = -2x \rightarrow 4x^r + 2x - 1 = 0 \rightarrow \begin{matrix} x = -1 \\ x = \frac{1}{2} \end{matrix}$$

$$\log_a (9x+1) = \log_a \left(9\left(\frac{1}{2}\right) + 1\right) = \log_a \frac{r}{\omega} = \frac{r}{\omega}$$

$$\log (x+1)^{-1} = -\log (x+1) \quad (2) \quad 137$$



$$\lim_{x \rightarrow (-2)^-} f(x) = f(-2) = a$$

$$\lim_{x \rightarrow (-2)^-} f(x) = \lim_{x \rightarrow (-2)^-} \frac{1+x^2}{-(x+2)} = \lim_{x \rightarrow (-2)^-} -(x^2 - 2x + 4) = -12$$

$$\rightarrow -12 = a$$

$$P(A) = .14$$

$$P(B) = .14$$

$$P(B|A) = .11 \rightarrow .11 = \frac{P(A \cap B)}{.14} \rightarrow P(A \cap B) = .154$$

$$P(A \cup B) = P(A) + P(B) - P(A \cap B) = .14 + .14 - .154 = .126$$

$$\left\{ \begin{array}{l} \bar{x} = 1. \\ \text{واریانس} = 15 \end{array} \right. \rightarrow CV = \frac{\sigma}{\mu} = \frac{1}{14}$$

$$\left\{ \begin{array}{l} \bar{x} = 14 \\ \text{واریانس} = 19 \end{array} \right. \rightarrow CV = \frac{\sigma}{\mu} = \frac{1}{18} \checkmark \quad \text{چون کمتر است}$$

$x$	$-2$	$1$
$y$	$y = -2x - 1$	$y = 2x + 1$

$$y = \begin{cases} -2x - 1 & x < -2 \quad \text{آینه انزلی} \\ 3 & -2 < x < 1 \quad \text{هم صعودی هم نزلی} \\ 2x + 1 & x > 1 \quad \text{آینه صعودی} \end{cases}$$

$$\sin x (-\cos x) = 1 \rightarrow \sin 2x = -\frac{1}{2}$$

$$\begin{cases} 2x = 2k\pi - \pi/4 \\ 2x = 2k\pi + 7\pi/4 \end{cases} \rightarrow \begin{cases} x = k\pi - \pi/8 \\ x = k\pi + 7\pi/8 \end{cases}$$

$$x = \frac{11\pi}{8}, \frac{23\pi}{8}, \frac{5\pi}{8}, \frac{13\pi}{8} \quad \Sigma = 2\pi$$

$$\lim_{x \rightarrow -1} \frac{x^2 + 1 \cdot x + 14}{12 + 4\sqrt{x}} = \frac{(x+2)(x+1)}{4(\sqrt{x}+2)} \times \frac{(\sqrt{x})^2 - 2\sqrt{x} + 4}{(\sqrt{x})^2 - 2\sqrt{x} + 4} \quad (۱۴۳) \text{ تمرین (۳)}$$

$$\lim_{x \rightarrow -1} \frac{(x+2)(x+1)(\sqrt{x})^2 - 2\sqrt{x} + 4}{4(x+1)} = \frac{(-4)(12)}{4} = -12$$

(دستی) جواب :

$$\frac{2x + 1}{4\left(\frac{1}{\sqrt{x}}\right)} = \frac{-4}{\frac{1}{2}} = -12$$

$$\lim_{x \rightarrow -} f(x) = \text{وجود ندارد}$$

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

$$\lim_{x \rightarrow -\infty} 2x + \sqrt{4x^2 + x} \times \frac{2x - \sqrt{4x^2 + x}}{2x - \sqrt{4x^2 + x}}$$

$$= \lim_{x \rightarrow -\infty} \frac{-x}{2x - \sqrt{4x^2 + x}} = \lim_{x \rightarrow -\infty} \frac{-x}{2x - 12x} = -\frac{1}{10}$$

$$\lim_{x \rightarrow -\infty} 2x + 2|x + \frac{1}{\lambda}| = 2x - 2x - \frac{1}{\epsilon} = -\frac{1}{\epsilon} \quad \text{روش دوم}$$

$$\lim_{x \rightarrow \pm\infty} \sqrt{ax^2 + bx + c} \sim \sqrt{a} \left| x + \frac{b}{2a} \right|$$

نیمه (۳) (۱۴۶)

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

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

$$f'(\epsilon) = \frac{(\frac{1}{\epsilon})(-2) + (2)(2)}{9} = \frac{4}{9}$$

نیمه (۲) (۱۴۷) کجرات سے  $x=2$  کی طرف سے

$$\lim_{x \rightarrow 2^+} f(x) = \lim_{x \rightarrow 2^-} f(x) = f(2)$$

$$\lim_{x \rightarrow 2^+} f(x) = 1 \quad \lim_{x \rightarrow 2^-} f(x) = 2a + b - \epsilon \quad f(2) = 1$$

$$\rightarrow 2a + b - \epsilon = 1 \quad \rightarrow 2a + b = 2 \quad (1)$$

$$f'_+(2) = f'_-(2)$$

$$f'_+(2) = \frac{-1}{(2-2)^2} = -1$$

$$f'_-(2) = -\frac{2x}{2} + a = a - \epsilon$$

$$\rightarrow a - \epsilon = -1$$

$$a = 2 \quad (1) \rightarrow b = -1$$

(11)  $\lim_{x \rightarrow 1} \frac{f(x) - f(1)}{x - 1}$  (1E1)

$$g'(x) = \frac{-x}{(x-1)^2} \rightarrow g'(r) = -r$$

$$g(r) = \omega$$

$$(f \circ g)'(r) = g'(r) f'(g(r)) = -r f'(\omega) = 4 \rightarrow f'(\omega) = -r$$

$$\frac{f(\varepsilon) - f(1)}{\varepsilon - 1} = \frac{\frac{r_1}{\varepsilon} - (-\frac{1}{\varepsilon})}{r} = \frac{11}{\varepsilon}$$

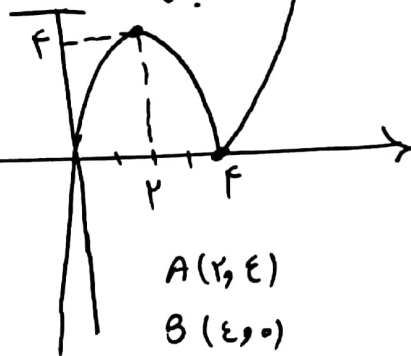
(12)  $\lim_{x \rightarrow 1} \frac{f(x) - f(1)}{x - 1}$  (1F9)

$$f'(x) = x + \frac{1}{x^2} \rightarrow f(r) = \frac{9}{r}$$

$$\frac{11}{\varepsilon} - \frac{9}{\varepsilon} = \frac{1}{\varepsilon} = 1/0$$

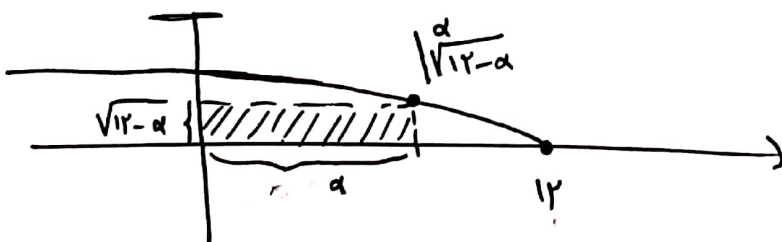
$$f(x) = x|x - 1|$$

(F)  $\lim_{x \rightarrow 1} \frac{f(x) - f(1)}{x - 1}$  (10)



$$y = \begin{cases} x^2 - \varepsilon x & x \geq \varepsilon \\ -x^2 + \varepsilon x & x < \varepsilon \end{cases}$$

$$AB = d = \sqrt{r^2 + 14} = r\sqrt{10}$$



(14)  $\lim_{x \rightarrow 1} \frac{f(x) - f(1)}{x - 1}$  (10)

$$S = a \sqrt{14 - a}$$

$$S'(a) = (1) \sqrt{14 - a} + \frac{-1}{2\sqrt{14 - a}} (a) = \frac{14 - 2a}{2\sqrt{14 - a}} \rightarrow a = 7, S(7) = 14$$





$$\therefore 0 \mid r, F \mid r, F' \mid -1 \rightarrow c = r$$

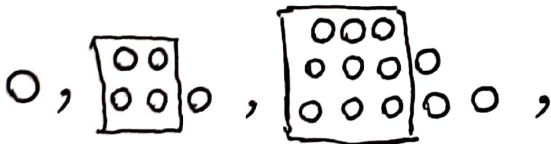
$$r b = 4 \rightarrow b = r$$

$$a^r = b^r + c^r \rightarrow a^r = 9 + 14 \rightarrow a = 5$$

$$e = \frac{c}{a} = \frac{r}{5} = .18$$

۱, ۵, ۱۲, ۲۲, ...

$$a_n = n^r + \frac{n^r - n}{r}$$



$$a_9 = 9 + \frac{11-9}{2} = 117$$

$$y = (x-1)^2 - \epsilon \rightarrow (x-1)^2 = y + \epsilon \rightarrow x-1 = \pm \sqrt{y+\epsilon}$$

$$x = 1 \pm \sqrt{y+\epsilon} \xrightarrow{x > 1} x = 1 + \sqrt{y+\epsilon} \rightarrow f^{-1}(x) = 1 + \sqrt{x+\epsilon}$$

$$1 + \sqrt{x+\epsilon} = \frac{x-9}{2} \rightarrow \sqrt{x+\epsilon} = \frac{x-11}{2}$$

$$\rightarrow x + \epsilon = \frac{x^2 - 22x + 121}{4} \rightarrow x^2 - 24x + 105 = 0$$

$$(x - 5)(x - 21) = 0 \rightarrow \begin{matrix} x = 5 \\ x = 21 \end{matrix}$$

$$\frac{\binom{5}{2}}{\binom{11}{2}} = \frac{2}{11}$$

سبع سوالات توسط ادیب بالا بود یعنی سوالاتی مثل سوال ۱۴۵ از مطالب نظام قدیم  
انتقال شده است درصد قابل قبول ۸۰ تا ۵۰ درصد میباشد

شکرآم و دلایل