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گزینہ ۱



$$x_s = \frac{a}{14} < 0 \quad \star_1$$

$$y_s = \frac{a^2}{14^2} + 1$$

$$s_{\text{min}} = \frac{1}{r} \times |\alpha - \beta| \times y_s$$

$$|\alpha - \beta| = \sqrt{s^2 - 4p} = \sqrt{\frac{a^2}{4^2} + \frac{1}{r}}$$

$$\Rightarrow \frac{1}{r} \times \frac{\sqrt{a^2 + 4r^2}}{4} \times \frac{a^2 + 4r^2}{r^2} = \frac{r\sqrt{a^2 + 4r^2}}{4r^2}$$

$$s = \frac{a}{4}$$

$$p = -\frac{1}{4}$$

$$a^2 = 4 \rightarrow a = \pm 2 \Rightarrow \underline{a = -2} \quad \star_1$$

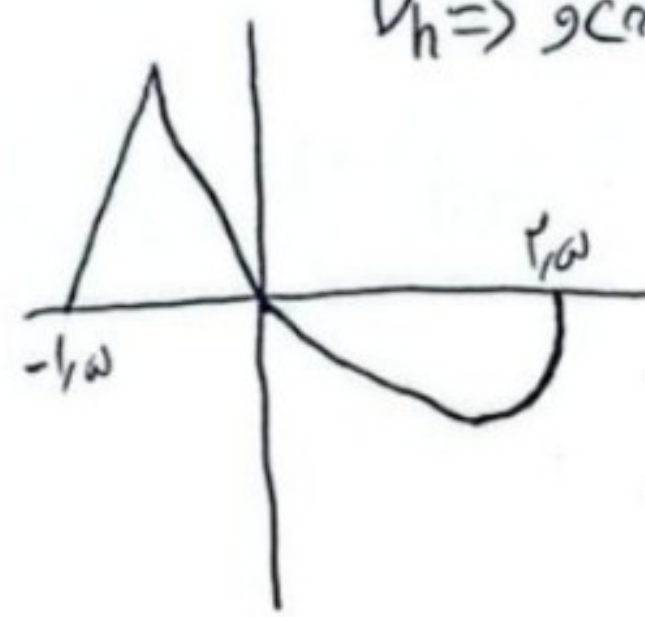
۱۱۲

گزینہ ۳

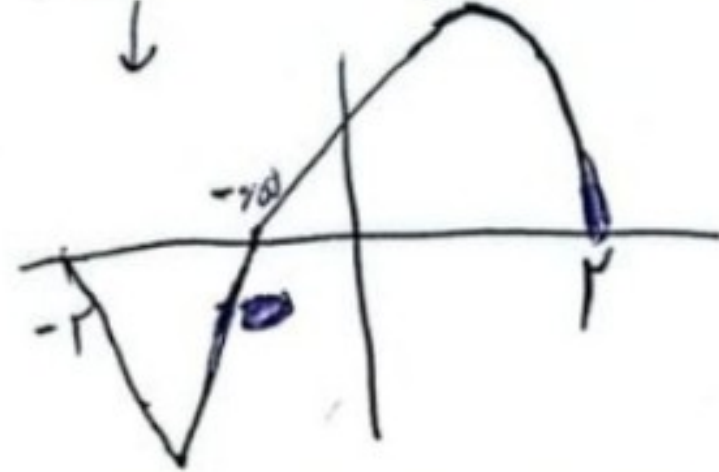
$$D_h \Rightarrow g(x) \neq 0 \rightarrow D_{f \circ g} | g(x) \neq 0$$

$$\rightarrow [-1, 0) \cup (-1, 1) \cup (1, 2]$$

$$f(x) \Rightarrow$$



$$\Rightarrow g(x) = f(x + \frac{1}{r}) \quad -1 \vee 0 \vee 1 \vee$$



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گزینہ ۱

$$x^2 + 1/2 \omega x - 1/2 = 0$$

$$\alpha + \beta = -1/2 \omega$$

$$\alpha \beta = -1/2$$

$$\alpha' = \alpha - \frac{1}{r}$$

$$\beta' = \beta - \frac{1}{r}$$

$$\begin{aligned} p' = \alpha' \beta' &= \alpha \beta - \frac{1}{r}(\alpha + \beta) + \frac{1}{r^2} \\ &= -1/2 + \frac{1/2 \omega}{r} + \frac{1}{r^2} = \underline{-0.25 \omega} \end{aligned}$$

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گزینہ ۳

$$D_{g \circ f} = \{x \in D_f \mid f(x) \in D_g\}$$

$$[-2, 0]$$

$$-\frac{2}{3}x - 2 > -\frac{1}{r}$$

$$x < -\frac{9}{r}$$

طول بازه = 0

$$\rightarrow [-2, -\frac{9}{r}) \rightarrow D_{g \circ f} \subset \mathbb{R} \rightarrow [-2, -\frac{9}{r})$$



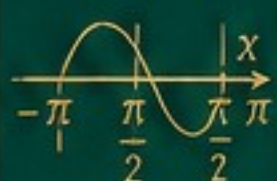
$f(x)$

$$y = ax^2 + bx + c$$

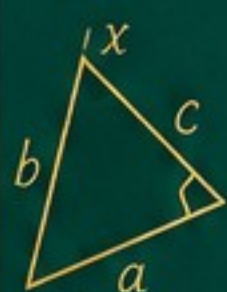
$$\sum_{k=1}^n k = \frac{n(n+1)}{2}$$



$\sin x$



$$\lim_{x \rightarrow a} \frac{f(x)}{g(x)}$$



π



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گزینہ (۲)

$$(\sqrt{\tan x} - \sqrt{\cot x})^2 = \left(\frac{r}{\sqrt{v}}\right)^2$$

$$\tan x + \cot x - 2 = \frac{r}{v}$$

$$\frac{1}{\sin x \cos x} = \frac{18}{v} \rightarrow \sin x \cdot \cos x = \frac{v}{18}$$

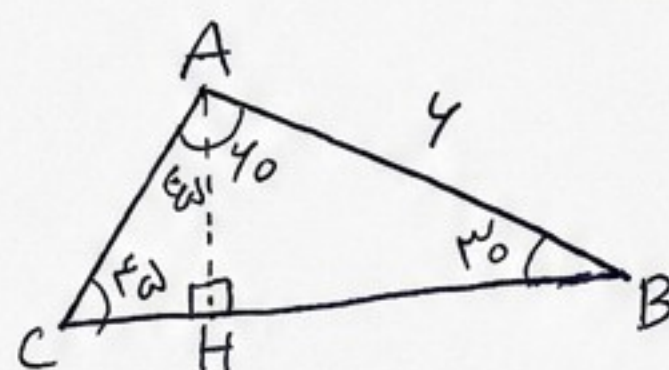
$$(\sin x - \cos x)^2 = 1 - 2 \sin x \cos x \quad |\tan x| > |\cot x|$$

$$|\sin x - \cos x| = \frac{\sqrt{2}}{3} \quad |\sin x| > |\cos x|$$

$$\sin x - \cos x = \pm \frac{\sqrt{2}}{3}$$

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گزینہ (۲)



$$\frac{BH}{y} = \cos 30^\circ = \frac{\sqrt{3}}{2}$$

$$BH = y\sqrt{3}$$

$$\frac{AH}{y} = \sin 30^\circ = \frac{1}{2}$$

$$AH = y = CH \rightarrow BC = BH + CH$$

$$\rightarrow y\sqrt{3} + y$$

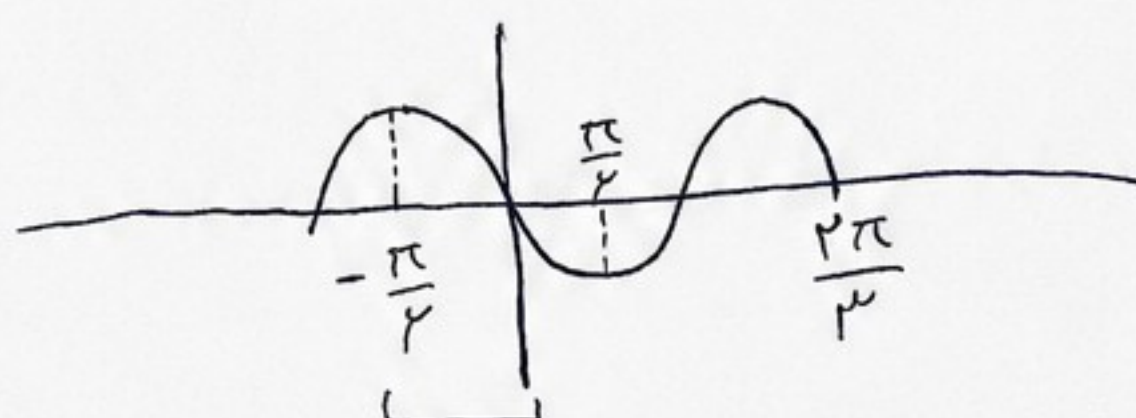
$$\rightarrow y(1 + \sqrt{3})$$

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گزینہ (۴)

$$f(x) = -\frac{1}{r} \cos\left(\frac{2\pi}{r} + 3x\right)$$

$$\rightarrow -\frac{1}{r} \sin 3x \rightarrow T = \frac{2\pi}{3}$$



$$\left[-\frac{\pi}{3}, 0\right]$$

$$\hookrightarrow a = -\frac{\pi}{3}$$

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گزینه (۲) $\sin(\pi+x) \cos(\frac{\pi}{2}+x) + 1 = r \sin(\pi-x)$

$\downarrow \quad \downarrow$
 $-\sin x \cdot -\sin x + 1 = r \sin x$
 $\sin^2 x + 1 = r \sin x$

$\sin^2 x - r \sin x + 1 = 0$

$(\sin x - 1)^2 = 0$

$\sin x = 1$

$x = 2k\pi + \frac{\pi}{2} \rightarrow \frac{\pi}{2} \text{ و } -\frac{3\pi}{2}$

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گزینه (۱)

$(\frac{1}{x})^{1-\log_{\frac{1}{x}} 10}$

$\frac{1}{x} \times (\frac{1}{x})^{-\log_{\frac{1}{x}} 10} \rightarrow \frac{1}{x} \times x^{\log_{\frac{1}{x}} 10} \rightarrow \frac{1}{x} \times \frac{1}{x} \rightarrow \frac{1}{x^2}$

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گزینه (۳)

$10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30$

$\downarrow \quad \downarrow \quad \downarrow$
 $Q_1 \quad Q_2 \quad Q_3$
 $+14 \quad +14 \quad +14$
 $\rightarrow \frac{34+14}{2} = 24$

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گزینه (۲)

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

$x^2 + ax - 1 = 0 \quad s = -a$

$p = -1$

$r\sqrt{10} = |\alpha - \beta| = \sqrt{s^2 - 4p}$

$\sqrt{a^2 + 4} = r\sqrt{10}$

$a^2 + 4 = 10 \rightarrow a = \pm 2$

$$f(x) = \begin{cases} 3 & x > 2 \\ x+1 & x < 2 \end{cases}$$

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گزینه ۱

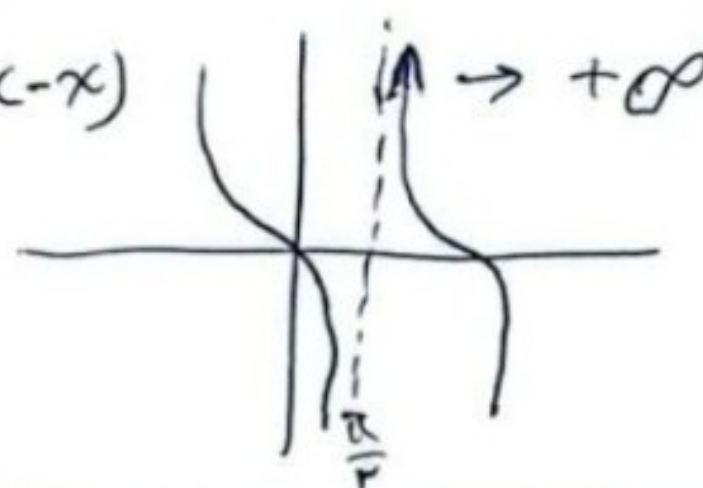
$$\lim_{x \rightarrow 2^-} \frac{3 - (x+1)}{x^2 - 4} = \frac{-x+2}{x^2-4} \xrightarrow{\text{HOP}} \frac{-1}{2x} = -\frac{1}{4}$$

$$\lim_{x \rightarrow 0^-} \frac{|x-|x||}{x^2+2x} = a$$

۱۲۳-
گزینه ۴

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

$$\lim_{x \rightarrow \frac{\pi}{2}^+} \tan(-x)$$



$$f(x) = 1 + \frac{2x}{a}$$

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گزینه ۳

$$x = 1 + \frac{2y}{a}$$

$$\frac{ax-a}{2} = y = f^{-1}(x)$$

$$g(x) = \begin{cases} 1 + \frac{2x}{a} & x \geq -1 \\ \frac{ax-a}{2} & x < -1 \end{cases}$$

$$-1^+ = -1^-$$

$$1 - \frac{2}{a} = \frac{-2a}{2}$$

$$1 - \frac{2}{a} = -a$$

$$a = 1 \quad \therefore -2$$

$$x = -\frac{1}{2}x$$

محور دایره محور x

$$\Rightarrow \begin{cases} 1-x & x \geq -1 \\ -x+1 & x < -1 \end{cases}$$

$$-x+1$$

$$g(-1) = 2$$

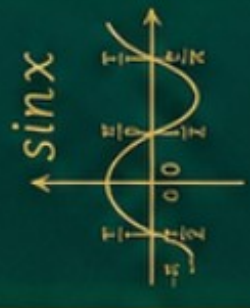
$$x = 1 \checkmark$$



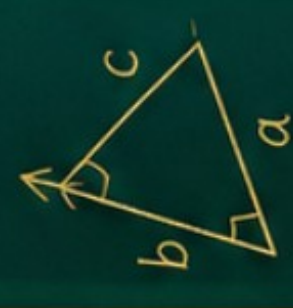
$$f(x)$$

$$y = ax^2 + bx + c$$

$$\sum_{k=1}^n k = \frac{n(n+1)}{2}$$



$$\lim_{x \rightarrow a} \frac{f(x)}{g(x)}$$



π



گزینہ ۱
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$$y = |x^2 - 4|$$

$$\left\{ \begin{array}{l} x^2 - 4 \\ -x^2 + 4 \end{array} \right.$$

$$\begin{array}{l} x \geq 2 \\ x < -2 \\ -2 \leq x < 2 \end{array}$$

$$f'_+(2) = 4 \rightarrow f - (2 - 4) = 8$$

$$f'_-(2) = -4$$

گزینہ ۳
-۱۲۶

$$m'(t) = \frac{(9)(\sqrt{t}) - (\sqrt{t})(9t+3)}{(\sqrt{t})^2}$$

$$m'(1) = 3$$

گزینہ ۲
-۱۲۷

$$f(x) = |x^2 - 9x + a|$$

$$\Delta > 0$$

$$f(1) > 0$$

$$f(4) > 0$$

$$1 - 8a > 0$$

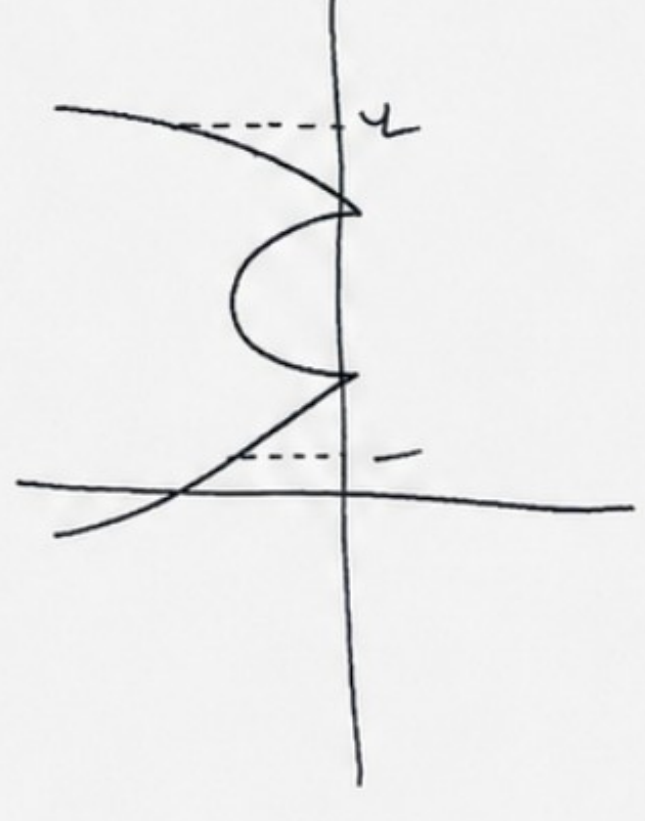
$$a < \frac{1}{8}$$

$$a - 4 > 0$$

$$a - 9 > 0$$

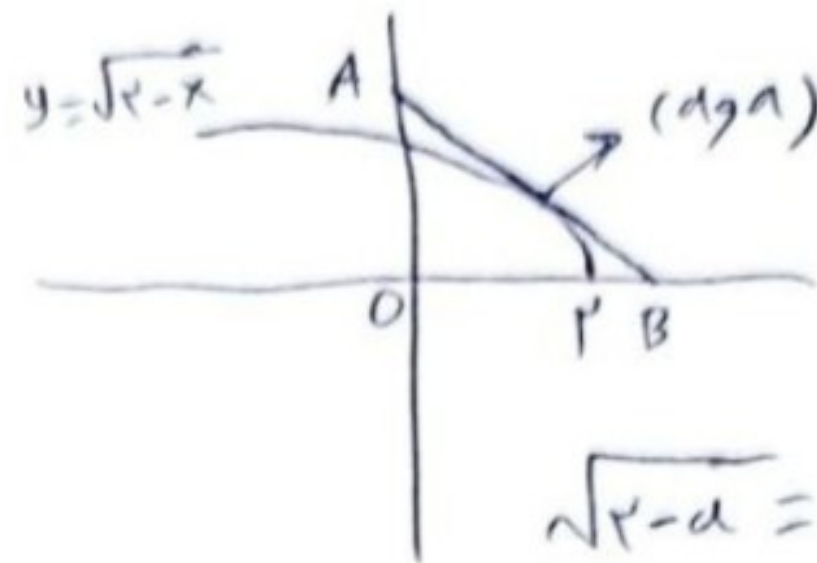
$$\left\{ \begin{array}{l} a < \frac{1}{8} \\ a < \frac{1}{9} \end{array} \right.$$

$$\forall a < \frac{1}{9}$$



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گزینه (۳)



$$S_{\Delta} = \frac{1}{2} \times \frac{2}{\sqrt{2}} \times \frac{\sqrt{2}}{2} = \frac{9}{4}$$

$$\sqrt{2-a} = a \rightarrow \sqrt{2-a} = a$$

$$a^2 + a - 2 = 0$$

$$a = 1 \checkmark$$

$$a = -2 \times$$

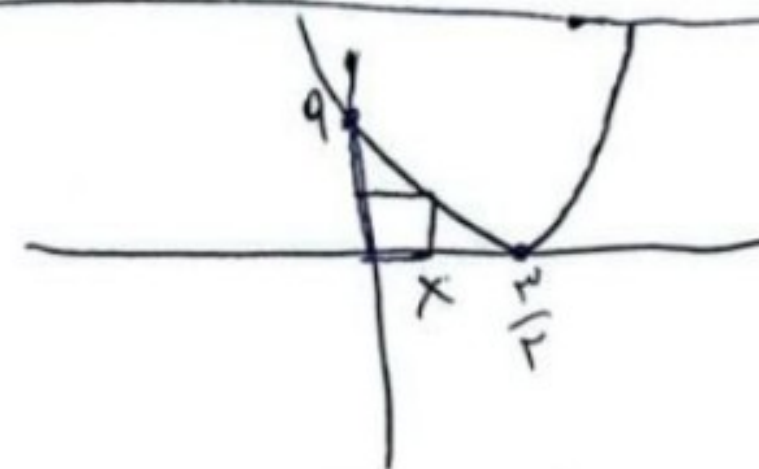
$$m = \frac{-1}{2\sqrt{2-1}} = -\frac{1}{2}$$

$$y-1 = -\frac{1}{2}(x-1) \rightarrow B = (2, 0)$$

$$y = -\frac{1}{2}x + \frac{2}{2} \rightarrow A = (0, \frac{2}{2})$$

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گزینه (۱)



$$S = (x)(x^2 - 12x + 9)$$

$$= x^3 - 12x^2 + 9x \rightarrow 12x^2 - 24x + 9 = 0$$

$$S = (\frac{1}{2})(f) = 2$$

$$x = \frac{1}{2} \checkmark$$

$$x = \frac{3}{2} \times$$

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گزینه (۳)

XXXXVVVV
VXXXVVV
VVXXXVV
VVVXXXV
VVVVXXX

کالت

$$5 \times 2 = 10$$

$$\frac{2}{2} \quad \frac{2}{1} \quad \frac{2}{1}$$

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گزینۀ (۳)

$$\frac{22}{\wedge \times \wedge} \rightarrow \omega \%$$

$\begin{matrix} \rightarrow 1 \\ 12 \\ 13 \\ 14 \\ 15 \\ 16 \\ 17 \\ 18 \end{matrix}$	$\begin{matrix} \rightarrow 2 \\ 22 \\ 24 \\ 26 \\ 28 \end{matrix}$	$\begin{matrix} \rightarrow 3 \\ 33 \\ 36 \end{matrix}$	$\begin{matrix} \rightarrow 4 \\ 41 \\ 42 \\ 44 \\ 48 \end{matrix}$	$\begin{matrix} \rightarrow 5 \\ 55 \end{matrix}$
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$\begin{matrix} \rightarrow 6 \\ 61 \\ 62 \\ 63 \\ 66 \end{matrix}$	$\begin{matrix} \rightarrow 7 \\ 71 \\ 77 \end{matrix}$	$\begin{matrix} \rightarrow 8 \\ 81 \\ 82 \\ 84 \\ 88 \end{matrix}$
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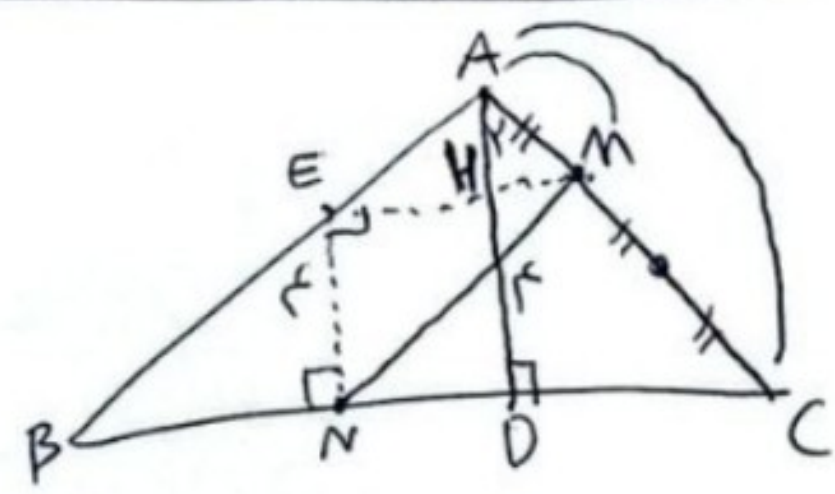
-۱۳۲

گزینۀ (۲)

$$\frac{\binom{\omega}{3}}{\binom{\omega}{3} + \binom{\omega}{1} \binom{\omega}{2}} = \frac{1}{\frac{1}{2}} = \frac{1}{2}$$

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گزینۀ (۴)

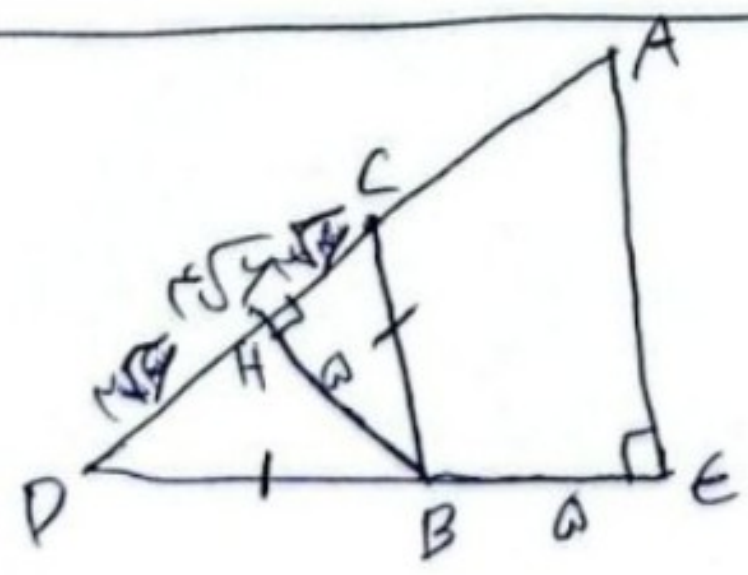


$$\frac{1}{3} = \frac{AM}{AC} = \frac{EM}{BC} = \frac{?}{9} \rightarrow EM = 3$$

$$\frac{AH}{AD} = \frac{1}{3} = \frac{?}{6} \rightarrow DH = EN = 4$$

$$MN^2 = EN^2 + EM^2$$

$$MN = 5$$



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گزینۀ (۳)

A, B روی نیمساز

$$BH = BE \text{ پس}$$

BDC متساوی الساقین

$$\frac{BD}{DC} = \frac{1}{2} = \frac{1}{2}$$

$$DB^2 = BH^2 + DH^2$$

$$PB^2 = 2\omega + 14^2 \rightarrow DB = 17$$

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گزینۀ ۱

$$y = x + 1 \perp ay - 2x = -2$$

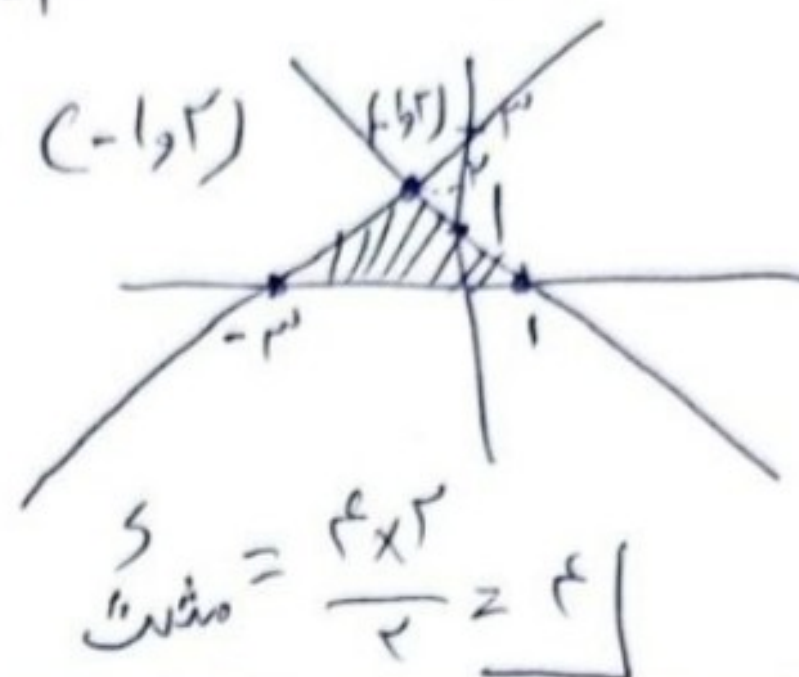
$$m = 1$$

$$\frac{a}{-2} = -1$$

$$a = -2$$

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

$$x + 1 = -x + 1 \Rightarrow (-1, 2)$$



$$S_{\text{مساحت}} = \frac{1}{2} \times 2 = 1$$

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گزینۀ ۴

$$x^2 + y^2 - 2x - y - 1 = 0$$

$$O(1, \frac{1}{2}) \quad r = \frac{\sqrt{1 + \frac{1}{4}}}{2} = \frac{r}{2}$$

$$C_{\text{دایره}} = O_C(\alpha, \alpha) \quad r_C = r$$

$$OO_C = |r - r_C|$$

$$\sqrt{(\alpha - 1)^2 + (\alpha - \frac{1}{2})^2} = r, \omega$$

$$\alpha = -1 \quad \sqrt{\alpha^2 + \alpha^2} = r, \omega \sqrt{2}$$

$$\alpha = r, \omega \sqrt{2}$$

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گزینۀ ۲

$$\frac{1}{a+1} \leq \frac{1}{a} < \frac{1}{a-1}$$

$$\frac{1}{a+1} \leq a < \frac{1}{a-1}$$

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گزینۀ (۳)

مجموع جملات متوالی
 $\frac{\text{آخری} + \text{اولی}}{2} \times \text{تعداد} = \text{دنباله حسابی}$

$$\bar{x} = \frac{h \times \frac{\text{اولی} + \text{آخری}}{2}}{h} \rightarrow \bar{x} = \frac{\text{آخری} + \text{اولی}}{2}$$

$$17 = \frac{172 + a}{2} \rightarrow a = 2$$

۱۷۲، ۱۷۴، ۱۷۶، ۱۷۸، ۱۸۰، ۱۸۲، ۱۸۴، ۱۸۶، ۱۸۸، ۱۹۰، ۱۹۲، ۱۹۴، ۱۹۶، ۱۹۸، ۲۰۰

$$h = 2 + (n-1)10 = 10n - 8$$

$$10n - 8 = 172$$

$$n = 18$$

$$\text{مجموع} = 18 \times \frac{172 + 2}{2}$$

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گزینۀ (۲)

$$-2(12 - 2 + a) = -2$$

$$10 + a = 1$$

$$a = -9$$

$$(x)(x^2 + x - 9) = -2$$

$$x^3 + x^2 - 9x + 2 = 0$$

$$(x+2)(x^2 - 5x + 1)$$

$$x = -2 \quad p = \frac{1}{5} \rightarrow -2 \times \frac{1}{5} = -\frac{2}{5}$$

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گزینۀ (۴)

$$\sqrt{a} + \sqrt{b} + \sqrt{c} = 3$$

$$a + \sqrt{b} - c = 6$$

$$\sqrt{a+c} + \sqrt{c} = 3$$

$$\sqrt{a+c} = 3 - \sqrt{c}$$

$$a+c = 9 - 6\sqrt{c} + c$$

$$c = \frac{1}{16}$$

$$\log_2 c \rightarrow \log_2 2^{-2} = -2$$

متین داداشی
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