

۱) نزدیکترین نقطه در دایره هندوگیک عدد گانگ و مخالف معر است.

$$x^2 + x = 1 \Rightarrow x^2 + x - 1 = 0 \Rightarrow x = \frac{-1 \pm \sqrt{5}}{2} \Rightarrow x = \frac{-1 + \sqrt{5}}{2} \quad \text{نزدیکترین}$$

$$\frac{25x^3 + 24x^2 + 11x + 2}{(5x^2 + 4x + 1)^2} = \frac{2(11x^3 + 15x^2 + 7x + 1)}{(5x + 1)^2}$$

$$= \frac{2(5x + 1)^2}{(5x + 1)^2} = \frac{2}{5x + 1} \xrightarrow{x = \frac{-1 + \sqrt{5}}{2}} \frac{2}{\cancel{5} \left(\frac{-1 + \sqrt{5}}{\cancel{5}} \right) + 1} = \frac{2}{\sqrt{5}} = \frac{2\sqrt{5}}{5}$$

$$(B \cap A) - B' = B \cap A \cap (B')' = B \cap B \cap A = B \cap A \quad \text{نزدیکترین}$$

$$(B \cap A) \cap (B \cup A) = B \cap A$$

$$A' \cap B = B \cap A' \Rightarrow (B \cap A') \cup (B \cap A) = B \cap (A \cup A') = B \quad \text{نزدیکترین}$$

$$V - \{a\} > 0 \Rightarrow a < \frac{V}{r} \Rightarrow a = r$$

$$a - r > 0 \Rightarrow a > r$$

$$A \begin{vmatrix} 9 \\ 1 \end{vmatrix}, B \begin{vmatrix} 1 \\ 1 \end{vmatrix} \quad \text{معرض یکدیگرند}$$

$$x_5 = \frac{1+9}{r} = 10, \quad S \begin{vmatrix} b \\ a-r \end{vmatrix} = S \begin{vmatrix} a \\ r \end{vmatrix} \Rightarrow y = k(a-a) + r$$

$$y \in B \Rightarrow 1 = k(1-10) + r \Rightarrow k = \frac{1}{9}$$

$$\Rightarrow \left(\frac{1}{9} \right) (0) = \frac{1}{9} \frac{r}{a} + \frac{1}{9} \frac{1}{a}$$

$$s = \alpha + \beta = \frac{-b}{a} \Rightarrow \frac{1}{s} = \frac{ra}{b} = \log_e \epsilon = r \log_e r \quad \text{نیز (✓)}$$

$$\Rightarrow \frac{a}{b} = \frac{1}{r} \log_e r \Rightarrow \frac{b}{a} = \log_{\frac{1}{r}} 10 \quad \frac{1}{r} \log_e r = \log_{\frac{1}{r}} 10$$

$$ra = b + c \Rightarrow r = \frac{b}{a} + \frac{c}{a} \Rightarrow \frac{c}{a} = r - \frac{b}{a} = r - \log_{\frac{1}{r}} 10$$

$$\Rightarrow \frac{c}{a} = r \log_{\frac{1}{r}} \left(\frac{1}{r} \right) - \log_{\frac{1}{r}} 10 = \log_{\frac{1}{r}} \left(\frac{1}{r} \right)^r - \log_{\frac{1}{r}} 10 = \log_{\frac{1}{r}} \frac{r}{10} = \log_{\frac{1}{r}} \frac{1}{\frac{10}{r}}$$

$$\left(\frac{1}{r} \right)^{\frac{c}{a}} = \left(r^{-\frac{1}{r}} \right)^{\frac{c}{a}} = r^{-\frac{1}{r} \times \frac{c}{a}} = r^{-\frac{1}{r} \log_{\frac{1}{r}} \frac{1}{\frac{10}{r}}} = r^{-\frac{1}{r} \log_{\frac{1}{r}} \left(\frac{1}{r} \right)^{-\frac{1}{r}}}$$

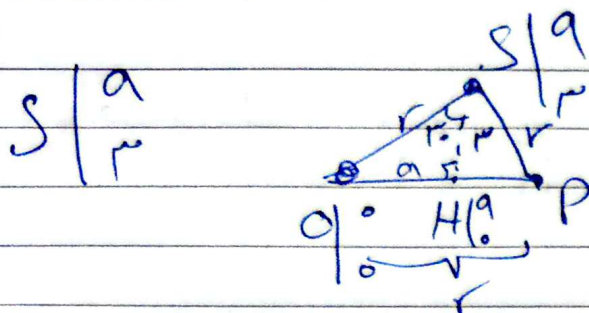
$$= \left(r^{\frac{1}{r}} \right)^{-\frac{1}{r} \times r} = \frac{1}{r} = \frac{1}{10} \Rightarrow r = 10$$

$$|\epsilon x - r| = x^r - x + a \quad x_s = \frac{-b}{ra} = \frac{-(-1)}{r} = \frac{1}{r} \quad \text{نیز (✓)}$$

$$\epsilon \left(\frac{1}{r} \right) - r = 0 \quad S \left(\frac{1}{r}, 0 \right) \quad y_s = 0$$

$$\left(\frac{1}{r} \right)^r - \frac{1}{r} + a = 0 \Rightarrow a = \frac{1}{\epsilon} \quad \begin{cases} -\epsilon x + r = x^r - x + \frac{1}{\epsilon} \\ \epsilon x - r = x^r - x + \frac{1}{\epsilon} \end{cases}$$

$$\Rightarrow \begin{cases} x^r + rx - \frac{r}{\epsilon} = 0 \Rightarrow x = \frac{-r \pm \sqrt{r^2 + 4r}}{r} \rightarrow -r \pm \sqrt{r^2 + 4r} \checkmark \\ x^r - rx + \frac{r}{\epsilon} = 0 \Rightarrow x = \frac{r \pm \sqrt{r^2 + 4r}}{r} \rightarrow \epsilon \pm \sqrt{r^2 + 4r} \checkmark \text{ max} \end{cases}$$



$$\tan \alpha = \frac{a}{r} = \frac{r \sin \alpha}{r \cos \alpha} \Rightarrow a = r \tan \alpha$$

$$x > r \Rightarrow x+1 > r \Rightarrow x+1 > 0 \Rightarrow f(x) > 0$$

$$x \leq r \Rightarrow -rx + 1 \geq 0 \Rightarrow -rx + 1 \geq 0 \Rightarrow -rx \geq -1 \Rightarrow r \leq x+1$$

$$\Rightarrow -rx + 1 \geq 0 \Rightarrow f(x) \geq 0 \Rightarrow \forall x \Rightarrow f(x) \geq 0$$

$f(x) \geq 0$

$$\Rightarrow g(x) = -x + \varepsilon \Rightarrow g(\varepsilon) = -(\varepsilon) + \varepsilon = 0$$

$$\Rightarrow f(g(x)) = f(g(\varepsilon)) = f(0) = 0+1=1$$

$$(f \circ f)(a) = a \Rightarrow f(x) = x$$

$$4x - x\sqrt{x} - (\sqrt{x} + 1) = x \Rightarrow 3x + 1 = (x+1)\sqrt{x}$$

$$\Rightarrow 3x(x+1) = (x+1)\sqrt{x} \Rightarrow \sqrt{x} = 3 \Rightarrow x = 9$$

$$f(a-9) = f(3-9) = f(-6) = 36 \Rightarrow a = 36$$

$$ax+b>0 \Rightarrow x > -\frac{b}{a} \xrightarrow{\text{ضرب في } (-1)} -\frac{b}{a} = -\frac{1}{r} \quad \text{فرصه (11)}$$

$$\Rightarrow \frac{b}{a} = \frac{1}{r} \Rightarrow b = \frac{1}{r} a$$

$$\underline{(r, r)} \quad \text{ل.} \quad \Sigma a + \frac{a}{r} = r \Rightarrow \text{ل.} \quad \frac{\Sigma a}{r} = r \Rightarrow a = \frac{a}{\frac{r}{r}} = r$$

$$\Rightarrow a=r, b=1 \quad f(x) = \frac{r^x - b}{a} = \frac{r^x - 1}{r}$$

$$\Rightarrow f(-r) = \frac{r^{-r} - 1}{r} = -\frac{r}{a}$$

$$(1+\cos \alpha) \left(\sqrt{1+\cot^2 \alpha} + \frac{1}{\tan \alpha} \right) \quad \text{فرصه (15)}$$

$$= (1+\cos \alpha) \left(\frac{1}{|\sin \alpha|} + \frac{\cos \alpha}{\sin \alpha} \right) \xrightarrow{\text{ضرب في } \sin \alpha}$$

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

$$= -\sin \alpha$$

$$\tan(\alpha + 15^\circ) = \frac{\sqrt{r}}{r}$$

نیز (۱۳)

$$\cot(11^\circ - \alpha) = \frac{1}{\tan(11^\circ - \alpha)} = \frac{1}{\tan(30^\circ - (\alpha + 15^\circ))}$$

$$= \frac{\tan 30^\circ - \tan(\alpha + 15^\circ)}{1 + \tan 30^\circ \tan(\alpha + 15^\circ)} = \frac{\frac{\sqrt{r}}{r} - \frac{\sqrt{r}}{r}}{1 - \frac{\sqrt{r}}{r} \times \frac{\sqrt{r}}{r}} = \omega \sqrt{r}$$

$$A = \sqrt{r} \cos(71^\circ) \sin 75^\circ - \sqrt{r} \sin(15^\circ) \cos(12^\circ) \quad \text{نیز (۱۴)}$$

$$\cos(11^\circ \pm \alpha) = -\cos \alpha$$

نیز

$$\cos(11^\circ - 75^\circ) = -\cos 75^\circ \quad \sin 90^\circ + \epsilon \delta = \cos \epsilon \delta = \frac{\sqrt{r}}{r}$$

$$\cos(71^\circ) = \cos(11^\circ + 75^\circ) = -\cos 75^\circ = -\frac{\sqrt{r}}{r}$$

$$\sin(75^\circ - \alpha) = -\cos \alpha \Rightarrow \sin(75^\circ - 75^\circ) = \sin(75^\circ) = -\frac{\sqrt{r}}{r}$$

$$A = \sqrt{r} \times \left(-\frac{\sqrt{r}}{r}\right) (-\cos 75^\circ) - \sqrt{r} \times \left(\frac{\sqrt{r}}{r}\right) \times (-\cos 75^\circ) \\ = \frac{\omega}{r} \cos 75^\circ = r_1 \omega \cos 75^\circ$$

$$\tan 7x + \tan 7x = \tan(2\pi) = 0 \Rightarrow \tan 7x = \tan(-7x) \quad \text{نیز (۱۵)}$$

$$7x = k\pi - 7x \Rightarrow 2x = k\pi \Rightarrow x = \frac{k\pi}{2} \quad k = 1, 3, 5, 7$$

$$a) \Rightarrow \lim_{x \rightarrow \sqrt{a}^+} \frac{\sqrt{x-a} + \sqrt{x} - \sqrt{a}}{\sqrt{x^2 - a^2}} =$$

(14) کنر

$$= \lim_{x \rightarrow \sqrt{a}^+} \frac{\sqrt{x-a}}{(\sqrt{x-a})(\sqrt{x+a})} + \lim_{x \rightarrow \sqrt{a}^+} \frac{\sqrt{x} - \sqrt{a}}{(\sqrt{x-a})(\sqrt{x+a})} \cdot \frac{\sqrt{x} + \sqrt{a}}{\sqrt{x} + \sqrt{a}}$$

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

$$\begin{aligned} \sqrt{x-a} &= \sqrt{(\sqrt{x} - \sqrt{a})(\sqrt{x} + \sqrt{a})} \\ &= \sqrt{x-a} \sqrt{x+a} \end{aligned}$$

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

$$x \rightarrow \sqrt{14} \Rightarrow (x - \sqrt{14})^{\frac{1}{2}} = x^{\frac{1}{2}} - \sqrt{14} x^{\frac{1}{2}} \quad \text{--- (14) کنر}$$

$$\Rightarrow a = -\sqrt{14}, b = \sqrt{14} \Rightarrow \frac{b}{a} = \frac{\sqrt{14}}{-\sqrt{14}} = -1$$

$$\left[\frac{b}{a} \right] = \left[\frac{-\sqrt{14}}{\sqrt{14}} \right] = -1$$

$$f(x) = -\frac{a}{r}x + r \Rightarrow f^{-1}(x) = -\frac{r}{a}x + r \quad \text{--- (14) کنر}$$

$$\lim_{x \rightarrow a} \frac{-\frac{r}{a}x + r}{-ax + r + rx - a} = r \Rightarrow \lim_{x \rightarrow a} \frac{-\frac{r}{a}x}{(a-r)x} = r \Rightarrow$$

$$\Rightarrow a|a-r| = 1 \Rightarrow \begin{cases} a \geq r \\ a < r \end{cases} \Rightarrow a = 1 + \sqrt{r}$$

LINE NOTE

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

(19) جز ۲

$$x \rightarrow -: \lim_{x \rightarrow -} \frac{x(x-1)}{x(x-a)} = \frac{-1}{-a} = \frac{1}{a} \Rightarrow \frac{1}{a} = \frac{a-1}{a+1}$$

$$\Rightarrow a = 1 \checkmark$$

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

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

$$\lim_{x \rightarrow \frac{\pi}{2}} \frac{\sin x \cos x + (\frac{\pi}{2} - x)}{x - \frac{\pi}{2}} = \lim_{x \rightarrow \frac{\pi}{2}} \frac{1 \cdot \cos x + x + \frac{1}{2} - \frac{\pi}{2}}{x - \frac{\pi}{2}} = \frac{1 \cdot \cos(\frac{\pi}{2}) + \frac{\pi}{2} + \frac{1}{2} - \frac{\pi}{2}}{-1} = \frac{1}{-1} = -1$$

$$\frac{1 \cdot \cos(\frac{\pi}{2}) + \frac{\pi}{2} + \frac{1}{2} - \frac{\pi}{2}}{-1} = -1$$

$$a+1=b \Rightarrow a=b-1$$

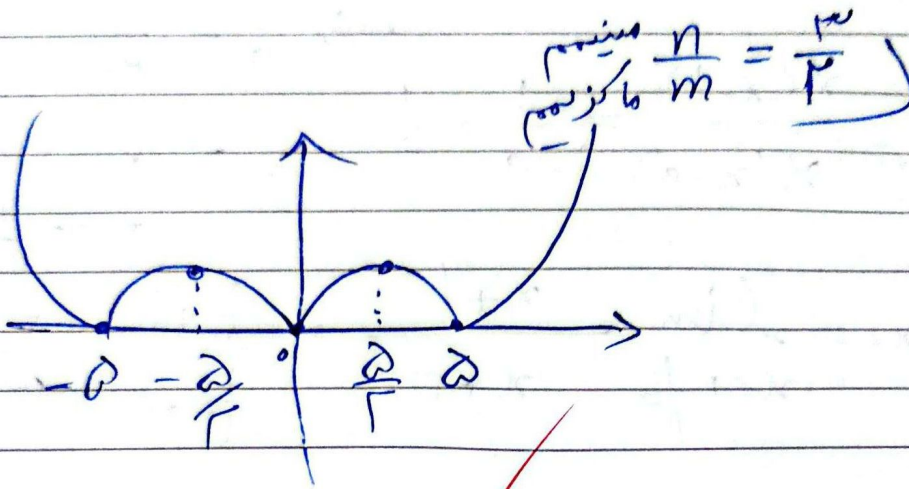
(21) جز ۲

$$1 = f'(1^-) = f'(1^+) = \frac{1}{2} b x^{-\frac{1}{2}} \Rightarrow b = \frac{4}{1} \Rightarrow a = \frac{4}{1} - 1 = 3$$

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

$$f(x) = |x|^p - \delta |x|$$

سوال ۱۲ (۲۲)



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