

طول عرض = $\frac{5}{4}$ افزایش طول $\rightarrow$ مستطیل طلایی $\frac{8K+n}{4K} = \frac{1+\sqrt{5}}{2} \Rightarrow 10K + 2n = 4K + 4K\sqrt{5}$ (۲)

$\frac{8}{5} = ?$ $\Rightarrow 4K - 4K\sqrt{5} = -2n \Rightarrow n = (2\sqrt{5}-2)K$ $\frac{+5}{\text{طول}} = 2\sqrt{5}+2$

$\Rightarrow \frac{S'}{S} = \frac{4K(2\sqrt{5}+2)K}{4K \cdot 8K} = \frac{2\sqrt{5}+2}{8}$ ✓

$\frac{\text{قطر}}{\text{طول}} = \frac{\sqrt{a^2+b^2}}{a} = \frac{1+\sqrt{5}}{2} \rightarrow 2\sqrt{a^2+b^2} = a + a\sqrt{5} \rightarrow 4(a^2+b^2) = a^2 + 5a^2 + 4a\sqrt{5}b$ (۲)

$\Rightarrow 4a^2 + 4b^2 = a^2 + 5a^2 + 4a\sqrt{5}b \Rightarrow 4b^2 = a^2 + 4a\sqrt{5}b$

$\Rightarrow (4+4\sqrt{5})a^2 = 4b^2 \Rightarrow \left(\frac{a}{b}\right)^2 = \frac{4}{4+4\sqrt{5}}$ ✓

$3a + \sqrt{2a^2+5a} = 2 \rightarrow \sqrt{2a^2+5a} = 2-3a \Rightarrow 2a^2+5a = 4-12a+9a^2 \Rightarrow 7a^2-17a+4=0$

$\frac{a+1}{a} = ? \Rightarrow a = \frac{17 \pm \sqrt{145}}{14} \rightarrow a \begin{cases} \frac{1}{2} \Rightarrow \frac{1}{2} + \frac{1}{2} = 1 \end{cases}$ (۲)

$\rightarrow \frac{\frac{1}{2}+1}{\frac{1}{2}} = \frac{\frac{3}{2}}{\frac{1}{2}} = 3$ ✓

$\frac{\sqrt{n+1}}{\sqrt{n-1}+3} - \frac{\sqrt{n+1}}{3-\sqrt{n-1}} = \frac{n-1}{\sqrt{n-1}} \rightarrow \frac{2\sqrt{n+1} - \sqrt{(n+1)(n-1)} - \sqrt{(n-1)(n+1)} - 3\sqrt{n+1}}{9-(n-1)} = \frac{n-1}{\sqrt{n-1}}$ (۲)

$\frac{2\sqrt{n+1} - 2\sqrt{n-1} - 3\sqrt{n+1}}{10-n} = \frac{n-1}{\sqrt{n-1}} \Rightarrow \frac{-\sqrt{n+1} - 2\sqrt{n-1}}{10-n} = \frac{n-1}{\sqrt{n-1}}$

$\Rightarrow -\sqrt{n+1} - 2\sqrt{n-1} = (n-1)\sqrt{n-1} \Rightarrow -\sqrt{n+1} = (n-1)\sqrt{n-1} + 2\sqrt{n-1} = (n+1)\sqrt{n-1}$

$\Rightarrow \sqrt{n+1} = -(n+1)\sqrt{n-1} \Rightarrow \sqrt{n+1} = 0 \Rightarrow n = -1$ ✓

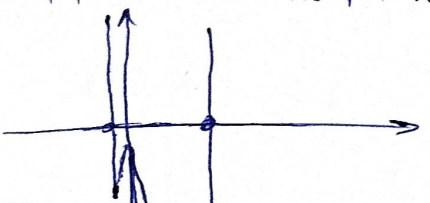
$\frac{1}{\sqrt{2-n}+2} - \frac{1}{2-\sqrt{2-n}} = \frac{2-n}{5\sqrt{2-n}} \xrightarrow{\sqrt{2-n}=t} \frac{1}{t+2} - \frac{1}{2-t} = \frac{t^2}{5t} \Rightarrow \frac{2-t-(2+t)}{4-t^2} = \frac{t^2}{5t}$ (۲)

$\rightarrow \frac{-2t}{4-t^2} = \frac{t^2}{5t} \Rightarrow \frac{2t}{t^2-4} = \frac{t^2}{5t} \Rightarrow 10t = t^3 - 4t \Rightarrow t^3 - 14t = 0 \Rightarrow t(t^2-14) = 0 \Rightarrow t^2 = 14 \Rightarrow t = \pm\sqrt{14} \rightarrow \sqrt{2-n} = \sqrt{14}$

$\Rightarrow n = -12$ ✓

$$\frac{1}{x^2} + \frac{1}{(1-m)^2} = \frac{140}{9} \xrightarrow{\text{مضروب}} \frac{(1-x)^2 + x^2}{x^2(1+x^2-2x)} = \frac{140}{9} \rightarrow 9(x^2-2x+1+x^2) = 140x^2(1-x)$$

$$\Rightarrow 18x^2 - 18x + 9 = 140x^2 - 140x^3 + 140x^2 \Rightarrow 140x^3 - 122x^2 + 18x - 9 = 0$$

$$\Rightarrow \text{گراف}$$


$$\Rightarrow \begin{cases} 2, 140 \\ -182 \end{cases} \xrightarrow{\text{ع2}} \text{حاصل شده}$$

$$\sqrt{x + \sqrt{-x^2 + 5x + 20}} + \sqrt{x + \sqrt{-x^2 + 4x - 1}} = x + 2$$

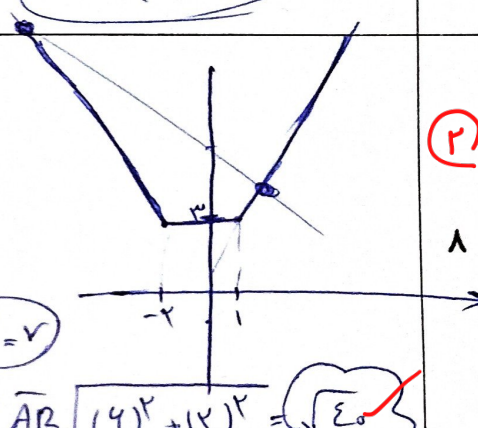
$$\frac{x^2(x-2)}{(20-x^2)(x-2)} = \frac{-x^2 + 4x - 1}{-(x-2)(x+2)} \rightarrow \frac{x}{-1} = \frac{x}{-1}$$

$$(20-x^2)(x-2) = (x-2)(x+2)(x-2) \Rightarrow D_f = \checkmark \Rightarrow \sqrt{4+5} + \sqrt{14+5} = 2+2 \in \mathbb{R}$$

در جواب 2

$$y = |x+2| + |x-1| \xrightarrow{\text{مشتق}} \begin{cases} -2 & x < -1 \\ 0 & -1 < x < 1 \\ 2 & x > 1 \end{cases}$$

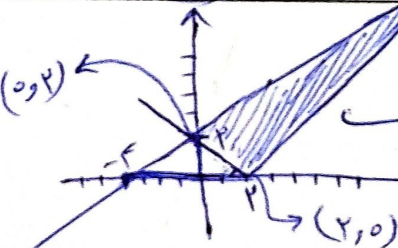
$$y + x = 14 \rightarrow y = -\frac{x}{2} + \frac{14}{2}$$

$$\Rightarrow \begin{cases} -2x-1 = -\frac{x}{2} + \frac{14}{2} \rightarrow \frac{3}{2}x = \frac{15}{2} \rightarrow x = 5 \rightarrow y = 7 \\ 2x+1 = -\frac{x}{2} + \frac{14}{2} \rightarrow \frac{5}{2}x = \frac{13}{2} \rightarrow x = 2.6 \rightarrow y = 8 \end{cases}$$


$$y = \sqrt{x^2 - 5x + 4} = \sqrt{(x-2)^2} = |x-2|$$

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

$$S = ?$$



$$x-2 = \frac{1}{x}x + 2 \Rightarrow \frac{1}{x}x = 4 \rightarrow x = 4$$

$$\rightarrow S = \frac{1}{2} \begin{vmatrix} 0 & 2 & 1 \\ 2 & 0 & 4 \\ 1 & 1 & 1 \end{vmatrix} = \frac{1}{2} (0 + 12 + 14 - 0 - 0 - 4) = 12 \checkmark$$

$$\text{مضروب} = \frac{1}{x-9}$$

$$\text{مضروب} = \frac{1}{x} \Rightarrow 20(n-9+n) = n(n+9) \Rightarrow 20n - 180 = n^2 + 9n$$

$$\Rightarrow n^2 - 11n + 180 = (n-48)(n-2) \Rightarrow \begin{cases} n = 2 \\ n = 48 \end{cases}$$

$$\Rightarrow n-9 = 48-9 = 39 \checkmark$$

$$\text{مضروب} = ?$$

مضروب 39 است این کار را انجام می دهی.

$$\frac{1 - Pn + n^r + n^s}{(n(1-n))^r} = \frac{P(n^r - n) + 1}{(n - n^r)^r} = \frac{140}{9} \xrightarrow{n^r - n = t} \frac{Pt+1}{t^r} = \frac{140}{9}$$

$$140t^r - 18t - 9 = 0 \xrightarrow{\text{root}} \begin{cases} t = 0,3 \rightarrow n^r - n - 0,3 = 0 \xrightarrow{\Delta > 0} S = 1 \\ t = -\frac{r}{14} \rightarrow n^r - n + \frac{r}{14} = 0 \xrightarrow{\Delta > 0} S = 1 \end{cases}$$

$$S = 2$$