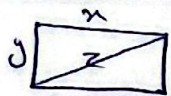


$$\frac{x_1}{y} = \frac{a}{r} \rightarrow x_1 = \frac{ay}{r}$$

$$\frac{x_r}{y} = \frac{1+\sqrt{5}a}{r} \rightarrow x_r = \frac{1+\sqrt{5}a}{r} y$$

$$\frac{s_r}{s_1} = \frac{x_r y}{x_1 y} = \frac{\frac{1+\sqrt{5}a}{r} y \times y}{\frac{ay}{r} y} = \frac{r + r\sqrt{5}a}{a}$$

۱



$$\frac{z}{x} = \frac{1+\sqrt{5}a}{r} \rightarrow z = \frac{1+\sqrt{5}a}{r} x$$

نشانده: $x^2 + y^2 = z^2 \rightarrow x^2 + y^2 = \left(\frac{1+\sqrt{5}a}{r}\right)^2 x^2 \rightarrow y^2 = \frac{r+2\sqrt{5}a}{r} x^2 \rightarrow y^2 = \frac{1+\sqrt{5}a}{r} x^2$

$$\rightarrow \frac{x^2}{y^2} = \frac{r}{\frac{1+\sqrt{5}a}{r}} = \frac{r^2}{1+\sqrt{5}a} = \frac{r^2}{r^2} = \frac{\sqrt{5}a-1}{r}$$

۲

$$ra + \sqrt{5}ar + fa = r \rightarrow \sqrt{5}ar + fa = r - ra \xrightarrow{(\cdot)^2} 5a^2r^2 + f^2a^2 = r^2 - 2ra + a^2$$

$$\rightarrow \sqrt{5a^2r^2 + f^2a^2} = r - ra \xrightarrow{(\cdot)^2} 5a^2r^2 + f^2a^2 = r^2 - 2ra + a^2$$

$$\rightarrow a = r \rightarrow \sqrt{8+8} = r - 9$$

$$\rightarrow a = \frac{r}{\sqrt{5}} \rightarrow \sqrt{\frac{8}{5} + \frac{8}{5}} = r - \frac{r}{\sqrt{5}} \rightarrow \frac{8}{\sqrt{5}} = \frac{r}{\sqrt{5}} \checkmark$$

$$\frac{a+1}{a} = \frac{\frac{r}{\sqrt{5}}+1}{\frac{r}{\sqrt{5}}} = \frac{9}{r} = \frac{4}{\sqrt{5}}$$

۳

$$\frac{\sqrt{n+1}}{\sqrt{n-1}+r} - \frac{\sqrt{n+1}}{r-\sqrt{n-1}} = \frac{n-1}{\sqrt{n-1}} \rightarrow \sqrt{n+1} \left(\frac{1}{\sqrt{n-1}+r} - \frac{1}{r-\sqrt{n-1}} \right) = \frac{\sqrt{n-1} \times \sqrt{n-1}}{\sqrt{n-1}}$$

$$\rightarrow \sqrt{n+1} \left(\frac{r-\sqrt{n-1}-r-\sqrt{n-1}}{9-n+1} \right) = \sqrt{n-1} \rightarrow \frac{-2\sqrt{n+1}}{10-n} = 1 \rightarrow -2\sqrt{n+1} = 10-n$$

$$\rightarrow 4n+4 = n^2 - 20n + 100 \rightarrow n^2 - 24n + 96 = 0$$

$$\rightarrow n = \frac{24 \pm \sqrt{576-384}}{2} \rightarrow n = 12 \pm 4\sqrt{3}$$

$$\rightarrow \sqrt{12-4\sqrt{3}} = \sqrt{12} \rightarrow 12-n = 12 \rightarrow n = 12$$

$$\frac{1}{\sqrt{r-n}+r} - \frac{1}{r-\sqrt{r-n}} = \frac{r-n}{\Delta\sqrt{r-n}} \rightarrow \frac{1}{t+r} - \frac{1}{r-t} = \frac{t^2}{at} \rightarrow \frac{r-t-t-r}{r-t^2} = \frac{t^2}{at}$$

$$\xrightarrow{t \neq 0} \frac{-2t}{r-t^2} = \frac{t^2}{at} \rightarrow -t^2 = -10 \rightarrow t^2 = 10 \rightarrow t = \pm\sqrt{10}$$

$$\rightarrow \sqrt{r-n} = \sqrt{10} \rightarrow r-n = 10 \rightarrow n = -10$$

$$\rightarrow \sqrt{r-n} = \sqrt{10} \rightarrow r-n = 10 \rightarrow n = -10$$

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$$\frac{(1-x)^2 + x^2}{x^2(1-x)^2} = \frac{14}{9} \rightarrow \frac{x^2 - 2x + 1 + x^2}{(x^2 - x)^2} = \frac{14}{9} \rightarrow \frac{2x^2 - 2x + 1}{(x^2 - x)^2} = \frac{14}{9}$$

$$\rightarrow \frac{2t+1}{t^2} = \frac{14}{9} \rightarrow 14t^2 = 18t + 9 \rightarrow 14t^2 - 18t - 9 = 0 \rightarrow t^2 - 1.8t - 0.64 = 0$$

$$\rightarrow t \rightarrow \begin{cases} t = \frac{1.8 \pm \sqrt{1.8^2 + 4 \cdot 0.64}}{2} = \frac{1.8 \pm 2.2}{2} \rightarrow \begin{cases} t = 2 \rightarrow x^2 - x = 2 \rightarrow x^2 - x - 2 = 0 \rightarrow \Delta = 9, S = \frac{-b \pm \sqrt{\Delta}}{a} = 1 \end{cases} \\ t = -0.4 \rightarrow x^2 - x = -0.4 \rightarrow x^2 - x + 0.4 = 0 \rightarrow \Delta = 0.2, S = 1 \end{cases} \rightarrow 1+1=2$$

$$\sqrt{x} + \sqrt{-x^2 + 6x^2 + 4x - 1} + \sqrt{x^2} + \sqrt{-x^2 + 4x - 1} = x + 2$$

$$\begin{aligned} -x^2(x-6) + 4x(x-6) &\geq 0 & -x^2 + 4x - 1 &\geq 0 \\ (x-6)(4x-x^2) &\geq 0 & x^2 - 4x + 1 &\leq 0 \\ \frac{(x-6)(4-x^2)}{x} &\geq 0 & x &\leq 4 \end{aligned}$$

$$\begin{aligned} &+ \frac{-6}{x} + \frac{4}{x} + \frac{1}{x} = \frac{-2}{x} & (-\infty, -6] \cup [4, \infty) & \textcircled{1} \\ &+ \frac{1}{x} + \frac{1}{x} + \frac{1}{x} = \frac{3}{x} & [4, 6] & \textcircled{2} \end{aligned}$$

$$\textcircled{1} \cap \textcircled{2} = \{4\} \rightarrow \sqrt{4+50} + \sqrt{14+50} = 4+2 \rightarrow \text{معادله یک جواب دارد}$$

$$y = |x+1| + |x-1| \begin{cases} x+1+x-1 = y \rightarrow y = 2x & x \geq 1 \\ x+1-x+1 = y \rightarrow y = 2 & -1 \leq x < 1 \\ -x-1-x+1 = y \rightarrow y = -2x & x < -1 \end{cases}$$

$$y = \frac{-1x}{2} + \frac{1x}{2} \rightarrow 2x+1 = \frac{-x}{2} + \frac{1x}{2} \rightarrow 4x+2 = -x+1 \rightarrow 5x = -1 \rightarrow x = -0.2 \rightarrow \text{قوس } A(2, 5)$$

$$y = \frac{-1x}{2} + \frac{1x}{2} \rightarrow 2 = \frac{-x}{2} + \frac{1x}{2} \rightarrow 4 = -x+1 \rightarrow x = -3 \rightarrow \text{قوس } B(-4, 2)$$

$$AB = \sqrt{(\Delta x)^2 + (\Delta y)^2} = \sqrt{(2-(-4))^2 + (5-2)^2} = \sqrt{40} = 2\sqrt{10}$$

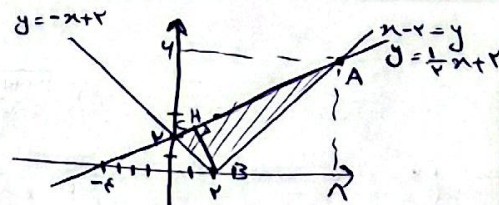
$$y = \sqrt{x^2 - 4x + 4} = \sqrt{(x-2)^2} \rightarrow y = |x-2|$$

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

$$\text{مقطع A: } \frac{1}{2}x + 2 = x - 2 \rightarrow \frac{1}{2}x = -4 \rightarrow x = -8$$

$$\text{مقطع B: } \frac{1}{2}x + 2 = 2 \rightarrow \frac{1}{2}x = 0 \rightarrow x = 0$$

$$S = \frac{AC \times BH}{2} = \frac{5\sqrt{5} \times \frac{4}{5\sqrt{5}}}{2} = 2$$



$$\text{برابر: } t \quad \text{فرماد: } t+9 \quad \frac{1}{t} + \frac{1}{t+9} = \frac{1}{2} \rightarrow \frac{2t+9}{t^2+9t} = \frac{1}{2} \rightarrow 2t^2+9t = t^2+18 \rightarrow t^2-9t-18=0$$

$$\rightarrow t^2 - 9t - 18 = 0 \rightarrow (t-14)(t+1.25) = 0 \rightarrow \begin{cases} t = 14 \\ t = -1.25 \end{cases}$$

بروز به تنهایی در ۳۴ ساله
کار را انجام می دهد