

$$\left. \begin{aligned} \frac{m}{y} = \frac{a}{f} \leadsto \frac{g}{\frac{a}{f}} = my = \left(\frac{a}{f}y\right)y = \frac{a}{f}y^2 \\ \frac{m'}{y} = \frac{1+\sqrt{5}}{2} \leadsto \frac{g}{\frac{a}{f}} \cdot m'y = \left(\frac{1+\sqrt{5}}{2}y\right)y = \frac{1+\sqrt{5}}{2}y^2 \end{aligned} \right\}$$

$$\frac{g_{m'}}{g_m} = \frac{\frac{1+\sqrt{5}}{2}y^2}{\frac{a}{f}y^2} = \frac{f(1+\sqrt{5})}{a} = \frac{2+2\sqrt{5}}{5}$$

$$\left[\frac{z}{n} y \mid \frac{z}{n} = \frac{1+\sqrt{5}}{2} \mid n^2 + y^2 = z^2 \right]$$

$$\frac{y^2}{n^2} = \frac{z^2 - n^2}{n^2} = \frac{z^2}{n^2} - \frac{n^2}{n^2} = \frac{z^2}{n^2} - 1 = \frac{4+2\sqrt{5}}{4} - 1 = \frac{2+2\sqrt{5}}{4} = \frac{1+\sqrt{5}}{2}$$

$$\begin{aligned} \sqrt{a^2 + 4a} = 2 - 3a &\xrightarrow{\text{مربع}} a^2 + 4a = 4 + 9a^2 - 12a \rightarrow 7a^2 - 14a + 4 = 0 \\ \rightarrow a^2 - 14a + 21 = 0 &\rightarrow (a-2)(a-14) \rightarrow a = \rightarrow \frac{14}{7} = 2 \text{ غلط} \\ &\rightarrow \frac{2}{7} \text{ غلط} \end{aligned}$$

$$\frac{a+1}{a} = \frac{\frac{2}{7}+1}{\frac{2}{7}} = \frac{9}{2} = \frac{f}{y}$$

$$\begin{aligned} t = \sqrt{n-1} \rightarrow \frac{\sqrt{t^2+2}}{t+2} - \frac{\sqrt{t^2+2}}{2-t} > \frac{t^2}{t} = t \rightarrow \sqrt{t^2+2} \left(\frac{2-t-t-2}{9-t^2} \right) = t \rightarrow \frac{-2\sqrt{t^2+2}}{9-t^2} = t \\ \frac{-2\sqrt{t^2+2}}{9-t^2} = t \rightarrow -2\sqrt{t^2+2} = 9-t^2 \rightarrow 4t^2+4 = 81-18t^2+9 \rightarrow 22t^2-77=0 \\ 22t^2-77=0 \rightarrow z = \frac{77 \pm \sqrt{77^2-4 \cdot 22 \cdot 0}}{2 \cdot 22} \rightarrow z = 11 \pm \frac{7}{2}\sqrt{22} \rightarrow z^2 = 11 \pm 4\sqrt{22} \rightarrow n-1 = 11 \pm 4\sqrt{22} \\ n \rightarrow 12 + 4\sqrt{22} \checkmark \\ n \rightarrow 12 - 4\sqrt{22} \checkmark \end{aligned}$$

$$\begin{aligned} \sqrt{2-n} = t \rightarrow \frac{1}{t+2} - \frac{1}{2-t} = \frac{t^2}{2t} \rightarrow 1+t-2t^2-2t^2-1+t = 4t^2-t^2 \\ \rightarrow t^4 - 14t^2 = 0 \rightarrow t^2(t^2-14) = 0 \rightarrow t = 0 \\ \rightarrow t = +\sqrt{14} \\ \rightarrow t = -\sqrt{14} \\ \sqrt{2-n} = 0 \rightarrow 2-n = 0 \rightarrow n = 2 \\ \sqrt{2-n} = \sqrt{14} \rightarrow -n = 12 \rightarrow n = -12 \\ \sqrt{2-n} = -\sqrt{14} \text{ غلط} \end{aligned}$$

یک ریشه مثبت دارد

$$\frac{1}{n^2} + \frac{1}{1+n^2-2n} = \frac{14}{9} \rightarrow 9+9n^2-18n+9n^2 = 14n^2+14n-28n^2$$

$$\rightarrow 14n^2 - 14n^2 + 14n - 18n - 9 = 0 \rightarrow 4n - 9 = 0 \rightarrow n = \frac{9}{4}$$

✓

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

$$D_f: -n^2(n-4) + 2(n-4)^2 \geq 0 \rightarrow (n-4)(4-n)^2 \geq 0 \rightarrow n=4, 2, -2$$

$$D_f: -n^2+4n-1 \geq 0 \rightarrow -(n-2)(n-4) \geq 0 \rightarrow \frac{2}{-1} \rightarrow D_f: [2, 4]$$

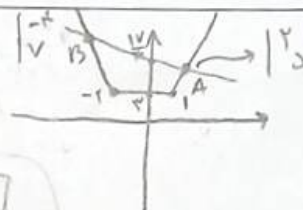
$$D_f \cap D_{f'}: \{4\}$$

بنا شده است قبول می شود

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$$\begin{cases} y = \frac{n}{4} + \frac{16}{n} \\ y = |n+2| + |n-1| \end{cases}$$

$$\Rightarrow -\frac{n}{4} + \frac{16}{n} = |n+2| + |n-1|$$

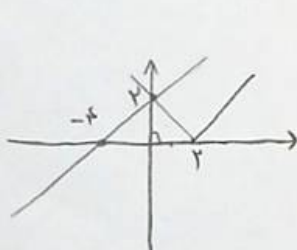


$$AB = \sqrt{(1)^2 + (4)^2} = \sqrt{1+16} = \sqrt{17} = \sqrt{17}$$

✓

$$4n-2 = -n+16 \rightarrow n = -4 \quad \text{or} \quad 4n+1 = -\frac{n}{4} + \frac{16}{n} \rightarrow 4n+n = -n+16 \rightarrow n = 2$$

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



$$\frac{8}{2} = \frac{4 \times 2}{2} = 4$$

✓

$$\begin{matrix} \text{محل} & \text{نقطه} & \text{محل} \\ = 100 & n+1 & = 100 \end{matrix}$$

$$\frac{1}{n} + \frac{1}{n+1} = \frac{1}{100} \rightarrow 100n+100+100n = n^2+n \rightarrow n^2-199n-100=0$$

$$\Delta = (199)^2 - 4(-100) = 1401 \rightarrow n = \frac{199 \pm \sqrt{1401}}{2} \rightarrow n = 200$$

بروز به نوبت این کار را در ۳۲ سال انجام می دهد

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