

نسبت طول عرض طایفی = $\frac{1+\sqrt{5}}{2} = \frac{n}{2+\sqrt{5}n} \rightarrow n = 2n + 2\sqrt{5}n$

طول جدید n

قدیم $S = (fn)(\Delta n)$

جدید $S = (fn)(2n + 2\sqrt{5}n)$

$\rightarrow = \frac{2+2\sqrt{5}}{\Delta}$

$\frac{S_{جدید}}{S_{قدیم}} = \frac{fn \times (2n + 2\sqrt{5}n)}{fn \times \Delta n}$

قطر $\frac{قطر}{طول} = \frac{1+\sqrt{5}}{2} \rightarrow قطر = \sqrt{طول^2 + عرض^2} \rightarrow \frac{قطر^2}{طول^2} = \frac{عرض^2 + طول^2}{طول^2}$

$\frac{قطر^2}{طول^2} = \frac{عرض^2 + طول^2}{طول^2}$

$\frac{4n^2 + 4y^2}{n^2} = \frac{4 + 2\sqrt{5}}{2} \rightarrow 4n^2 + 4y^2 = (4 + 2\sqrt{5})n^2$

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

$2a + \sqrt{2a^2 + 4a} = 2 \rightarrow 2a - 2 = -\sqrt{2a^2 + 4a}$

$\rightarrow 4a^2 + 4 - 4a = 2a^2 + 4a \rightarrow 2a^2 - 4a + 4 = 0$

$\rightarrow a = 2 \rightarrow$ جوابی رده

$\angle a = \frac{2}{\sqrt{5}} \checkmark \rightarrow \frac{a+1}{a} = \frac{\frac{2}{\sqrt{5}} + 1}{\frac{2}{\sqrt{5}}} = \frac{4}{2} = 2$

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

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

$\rightarrow n^2 - 24n + 94 = 0 \rightarrow n = \frac{24 \pm \sqrt{24^2 - 4 \times 94}}{2} = \frac{24 \pm 14\sqrt{3}}{2} = 12 \pm 7\sqrt{3}$

$\rightarrow n \geq 10 \rightarrow n = 12 + 7\sqrt{3} \rightarrow$ یک ریشه مثبت

$\frac{1}{\sqrt{2-n+2}} + \frac{1}{\sqrt{2-n-2}} = \frac{2-n}{\Delta\sqrt{2-n}} \rightarrow \frac{2\sqrt{2-n}}{-(n+2)} = \frac{2-n}{\Delta\sqrt{2-n}}$

$\rightarrow 10(2-n) = (2-n)(-n-2) \xrightarrow{n \neq 2} 10 = -n-2$

$\rightarrow n = -12 \rightarrow$ ریشه مثبت ندارد

$$\frac{1}{n^2} + \frac{1}{(1-n)^2} = \frac{140}{9} \rightarrow \frac{n^2 - 2n + 1}{[n(1-n)]^2} = \frac{140}{9}$$

$$\frac{n - 2n^2}{t^2} = \frac{140}{9} \rightarrow 140t^2 + 18t - 9 = 0$$

$$\rightarrow t = \frac{-18 \pm \sqrt{18}}{280} \quad \begin{cases} t = \frac{3}{14} = n - n^2 \rightarrow n^2 - n + t = 0 \rightarrow S = 1 \\ t = -\frac{3}{14} = n - n^2 \rightarrow n^2 - n + t = 0 \rightarrow S = 1 \end{cases}$$

$$\rightarrow n = \frac{1 \pm \sqrt{1-4t}}{2} \quad \begin{cases} n = \frac{1+t}{2} \\ n = \frac{1-t}{2} \end{cases} \quad S = 1 + 1 = 2$$

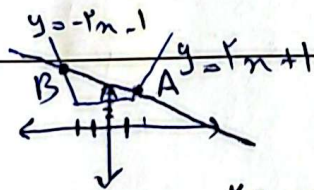
دائره $\rightarrow -n^2 + 4n - 1 = -(n-2)(n-4) \geq 0 \rightarrow n \in [2, 4]$

$$\rightarrow -n^2 + 4n + 12n - 100 = -(n-4)(n-5)(n+5) \geq 0$$

$$\rightarrow n \in [4, 5] \cup (-\infty, -5]$$

اشترك $D = \{4\} \rightarrow$ بينه جوابي دعه $\rightarrow 4 = 2 + 4 = 2 + n \checkmark$

كل جواب 4

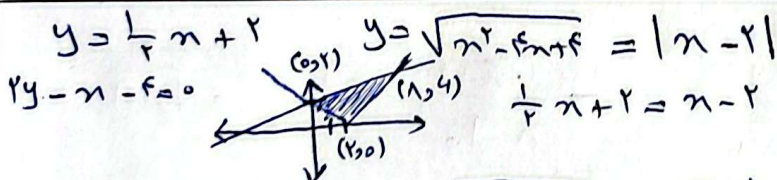


$$3y + n = 14 \rightarrow y = -\frac{n}{3} + \frac{14}{3}$$

$$2n + 1 = -\frac{n}{3} + \frac{14}{3} \rightarrow \frac{14}{3} = \frac{7}{3}n \rightarrow n = 2, y = 5$$

$$-2n - 1 = -\frac{n}{3} + \frac{14}{3} \rightarrow \frac{5}{3}n = -\frac{15}{3} \rightarrow n = -3, y = -5$$

$$\rightarrow AB = \sqrt{4^2 + 12^2} = \sqrt{\frac{160}{110}} = 4\sqrt{5}$$



$$\text{مساحت} = \sqrt{16^2 + 4^2} = \sqrt{180} = 6\sqrt{5}$$

$$\text{ارتفاع} = \frac{1 - 2 - 4}{\sqrt{5}} = \frac{4}{\sqrt{5}}$$

$$S = \frac{1}{2} \times \frac{4}{\sqrt{5}} \times 6\sqrt{5} = 12$$

$$\text{سرعت} = n$$

$$\frac{1}{n} + \frac{1}{n+9} = \frac{1}{40} \rightarrow \frac{2n+9}{n(n+9)} = \frac{1}{40} \rightarrow n^2 + 9n = 40n + 180$$

$$\rightarrow n^2 - 31n - 180 = 0 \rightarrow (n-44)(n+5) = 0$$

$$\rightarrow n = 44 \rightarrow 44 \text{ م.س.}$$