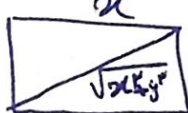


۱۹,۵

① Δx  $\rightarrow \frac{\Delta x + b}{4x} = \frac{\sqrt{\Delta} + 1}{2} \rightarrow 10x + 2b = 4\sqrt{\Delta}x + 4x$
 $b = (4\sqrt{\Delta} - 3)x \leftarrow 2b = (8\sqrt{\Delta} - 6)x$
 $\frac{(\Delta + 4\sqrt{\Delta} - 3)x \times 4x}{\Delta x \times 4x} = \boxed{\frac{(2 + 2\sqrt{\Delta})}{\Delta}}$

②  $\rightarrow \frac{\sqrt{x^2 + y^2}}{x} = \frac{\sqrt{\Delta} + 1}{2}$
 $2\sqrt{x^2 + y^2} = (\sqrt{\Delta} + 1)x$
 $\sqrt{x^2 + y^2} = \frac{(\sqrt{\Delta} + 1)x}{2} \rightarrow x^2 + y^2 = \frac{(4 + 2\sqrt{\Delta})x^2}{4}$
 $(2 + 2\sqrt{\Delta})x^2 = 4y^2 \leftarrow (4 + 2\sqrt{\Delta})x^2 = 4x^2 + 4y^2$
 $x^2 = \left(\frac{4}{2 + 2\sqrt{\Delta}}\right)y^2 \rightarrow \boxed{\frac{x^2}{y^2} = \frac{2}{1 + \sqrt{\Delta}}}$

③ $\sqrt{2a^2 + 4a} = 2 - 3a \rightarrow 2a^2 + 4a = 9a^2 - 12a + 6$
 $7a^2 - 16a + 6 = 0 \rightarrow a^2 - 14a + 28 = 0 \rightarrow a = \frac{14 \pm \sqrt{192}}{2}$
 $\frac{a+1}{a} = \frac{\frac{7}{\sqrt{3}}}{\frac{2}{\sqrt{3}}} = \boxed{\frac{7}{2} = 3,5}$

④ $\frac{((\sqrt{x+1})(3 - \sqrt{x-1})) - (\sqrt{x+1}(3 + \sqrt{x-1}))}{10 - x} = \sqrt{x-1} \rightarrow x \neq 1$

$\frac{(\sqrt{x+1})(-2\sqrt{x-1})}{10 - x} = \sqrt{x-1} \rightarrow -2\sqrt{x+1} = 10 - x$
 $4x + 4 = x^2 - 20x + 100$
 $x^2 - 24x + 96 = 0 \rightarrow \Delta = \frac{24^2 - 4 \times 96}{2} = 144 \pm 192$
 $\Delta = \frac{24 \pm 12\sqrt{3}}{2} = 12 \pm 6\sqrt{3}$
 ۲ ریشه مثبت

$$\textcircled{5} \quad \frac{1}{t+2} - \frac{1}{2-t} = \frac{t^2}{5t} \rightarrow \frac{2-t-2-t}{4-t^2} = \frac{t}{5}$$

$$\frac{-2t}{4-t^2} = \frac{t}{5} \rightarrow 5t - t^3 = -10t \rightarrow t^3 - 15t = 0$$

$$t=0 \quad \leftarrow \quad t(t^2-15)=0$$

1, 1.75

$$t = \sqrt{2-n}$$

$$t = \pm \sqrt{15}$$

$$x=2$$

$$x=-12$$

عقود
زیر منفی است.

$x=2$ خارج عبارت را صفر می کند

$$\textcircled{6} \quad \frac{x^2 - 2n + 1 + x^2}{(x(1-n))^2} = \frac{2x^2 - 2n + 1}{(x(n-1))^2} = \frac{2(x^2 - n) + 1}{(x^2 - n)^2} = \frac{140}{9}$$

$$x^2 - n = t \quad \textcircled{5}$$

$$\frac{2t+1}{t^2} = \frac{140}{9} \rightarrow 140t^2 - 18t - 9 = 0 \rightarrow t = \frac{18 \pm \sqrt{9014}}{2 \times 140}$$

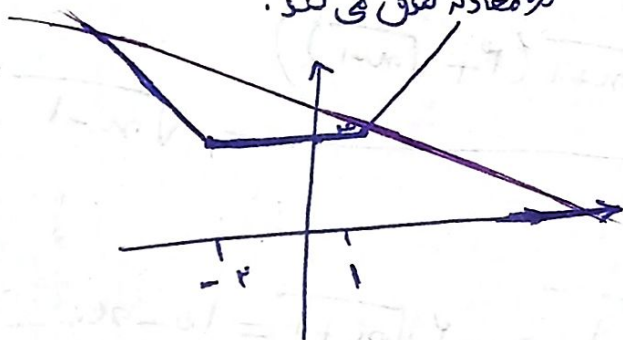
برای t دو مقدار به دست می آید که اگر بفرض لحسم مجموع ریشه ها را بدست آوریم نیاز به حل معادله

$$2\left(-\frac{b}{a}\right) = 2 \times (1) = 2 \quad \text{نسبت بلکه}$$

$$\textcircled{7} \quad -x^2 + 4x - 8 \geq 0 \rightarrow -(x-2)(x-4) \geq 0 \rightarrow x \in [2, 4]$$

$$-x^3 + 7x^2 + 25x - 100 \geq 0 \quad \begin{matrix} \text{از ریشه ی بالا} \\ \text{فقط } x=4 \end{matrix}$$

$$x=4 \quad \text{فقط}$$



$$2x+1 = -\frac{1}{3}x + \frac{14}{3}$$

$$4x+3 = -x+17$$

$$x=14$$

$$x=2$$

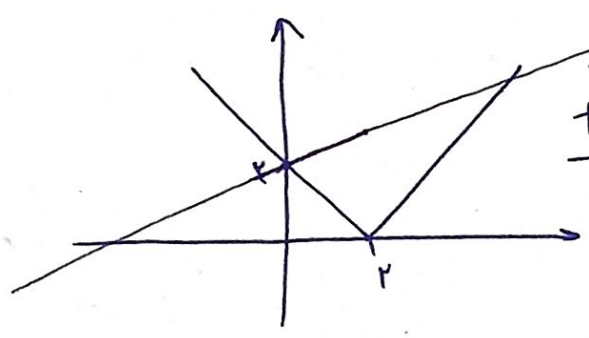
$$y=5$$

$$-2x-1 = -\frac{1}{3}x + \frac{14}{3} \rightarrow x=-4 \quad y=7$$

$$\sqrt{4^2 + 2^2} = 2\sqrt{10}$$

9

$$\sqrt{(x-r)^2} = |x-r| \rightarrow \frac{1}{r} x + r = |x-r|$$



$$\begin{array}{r} +r \\ +0 \\ \hline \frac{r}{r} \end{array} \begin{array}{l} (0, r) \\ (r, 0) \\ (r, r) \\ (0, r) \end{array} \begin{array}{r} +0 \\ +1r \\ \hline \frac{1r}{r} \end{array}$$

$$\frac{1}{r} x + r = x - r \rightarrow \boxed{x = 1}$$

$$\frac{r \cdot 1 - r}{r} = \boxed{1}$$

10

$$\frac{1}{h} + \frac{1}{h+9} = \frac{1}{r_0} \rightarrow \frac{r_0 h + 9}{h(h+9)} = \frac{1}{r_0} \rightarrow r_0 h + 11r_0 = h^2 + 9h$$

$$\boxed{h = r_0} \leftarrow \begin{array}{l} h^2 - r_0 h - 11r_0 = 0 \\ (h - r_0)(h + 11r_0) = 0 \end{array}$$