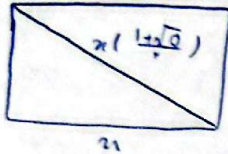


نسبت طلایی = $\frac{1+\sqrt{5}}{2}$

طول جبهه مستطیل = $2\left(\frac{1+\sqrt{5}}{2}\right) = 2(1+\sqrt{5})$

مساحت مستطیل جبهه = $8(1+\sqrt{5})$

نسبت = $\frac{8(1+\sqrt{5})}{20} = \frac{2(1+\sqrt{5})}{5}$



عرض = $2x^2\left(\frac{1+\sqrt{5}}{2}\right)^2 - x^2 = x^2\left(\frac{3+\sqrt{5}}{2}\right) - x^2 = x^2\left(\frac{1+\sqrt{5}}{2}\right)$

طول عرض = $\frac{x}{x\sqrt{\frac{1+\sqrt{5}}{2}}} \rightarrow \left(\frac{1}{\sqrt{\frac{1+\sqrt{5}}{2}}}\right)^2 = \frac{1}{\frac{1+\sqrt{5}}{2}} = \frac{2}{1+\sqrt{5}} \times \frac{\sqrt{5}-1}{\sqrt{5}-1} = \frac{\sqrt{5}-1}{2}$

$\sqrt{2a^2+fa} = 2-2a \rightarrow |2a^2+fa| = 9a^2+f-12a$

$2a^2+fa = 9a^2+f-12a \rightarrow 7a^2-12a+f=0 \rightarrow \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{12 \pm \sqrt{144-28f}}{14}$ 2 → غلط
3 → صحیح

$2a^2+fa = -9a^2-f+12a \rightarrow 11a^2-12a+f=0 \rightarrow \Delta < 0$

$\frac{2}{\sqrt{5}} + 1 = \frac{9}{2}$

6

$$\sqrt{x^2 + \sqrt{-x^2 + f_0 x + 100}} + \sqrt{x^2 + \sqrt{-x^2 + 9x - 1}} = x + 1$$

$$\downarrow$$

$$-x^2(x-f) + 100(x-f)$$

$$\downarrow$$

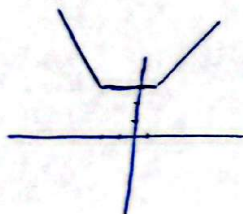
$$-(x-f)(x-1)$$

$$(x-f)(x+10)(x-1)$$

$$\frac{-10}{+} - \frac{f}{+} - \frac{1}{-} \cap \frac{1}{-} + \frac{f}{-} = \boxed{f} \rightarrow \text{المعادلة صحيحة}$$

7

$$y = |x+1| + |x-1| \rightarrow 1x+1 \rightarrow 1x+1 = \frac{14-x}{1} \rightarrow 4x+1 = 14-x \rightarrow x=3$$



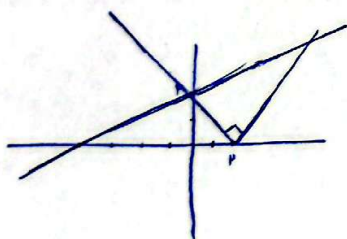
$$y = 2$$

$$-1x-1 \rightarrow -1x-1 = \frac{14-x}{1} \rightarrow -4x-1 = 14-x \rightarrow x=-5$$

$$y = 2$$

$$AB = \sqrt{4^2 + 1^2} = \sqrt{17} = \boxed{\sqrt{17}}$$

8



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

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

$$\frac{1}{2}x + 1 = 2-x \rightarrow x=2, y=2$$

$$\frac{1}{2} \begin{vmatrix} 1 & 0 & 2 \\ 4 & 2 & 0 \\ 1 & 1 & 1 \end{vmatrix} = \boxed{12}$$

9

$$\frac{1}{x} + \frac{1}{x+9} = \frac{1}{10} \rightarrow \frac{10x+9}{x^2+9x} = \frac{1}{10} \rightarrow x^2+9x = 10x+10$$

$$\rightarrow x^2-10x-10=0 \rightarrow (x-10)(x+1)=0$$

$$\rightarrow x = \boxed{10}$$

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