Date: / / Sat Sun Man Tue Thu Wed Fri Subject:

ستایش عنبری ۲۰ یازدهم ریاضی تکلیف شماره

①

$\frac{\text{طول}}{\text{عرض}} = \varphi$ $\frac{\text{مساحت طلایی}}{\text{مساحت اولیه}} = ?$

ص

$S_{\text{قبلی}} = 4a \times 5a$

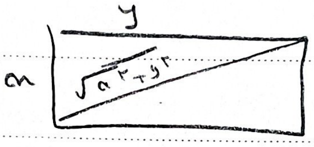
$\frac{L}{4a} = \frac{\sqrt{5}+1}{2} \rightarrow S_{\text{جدید}} = 4a \times 2a(\sqrt{5}+1)$

$$\frac{4a \times 2a(\sqrt{5}+1)}{4a \cdot 5a} = 0.4(\sqrt{5}+1)$$

---

②

$\frac{\text{قطر}}{\text{طول}} = \frac{\sqrt{5}+1}{2}$



ص

$$\frac{\sqrt{a^2+y^2}}{y} = \frac{\sqrt{5}+1}{2} \rightarrow \frac{a^2+y^2}{y^2} = \frac{6+2\sqrt{5}}{4}$$

$$2a^2+2y^2 = 3y^2+y^2\sqrt{5} \rightarrow a^2 = y^2\left(\frac{1+\sqrt{5}}{2}\right) \rightarrow \frac{y^2}{a^2} = \frac{\sqrt{5}-1}{2}$$

---

③

$3a + \sqrt{2a^2+4a} = 2$ $\frac{a+1}{a}$

ص

$$2a^2+4a = 9a^2+4-12a \rightarrow 7a^2+4-16a=0 \rightarrow \Delta=144$$

$$a = \frac{16 \pm 12}{14} \rightarrow a = 2 \times,\ \frac{2}{7} \checkmark$$

$$\frac{\frac{2}{7}+\frac{7}{7}}{\frac{2}{7}} = \frac{9}{2} = 4.5$$

---

④

$$\frac{\sqrt{a+1}}{\sqrt{a-1}+3} - \frac{\sqrt{a+1}}{3-\sqrt{a-1}} = \frac{a-1}{\sqrt{a-1}}$$

ص

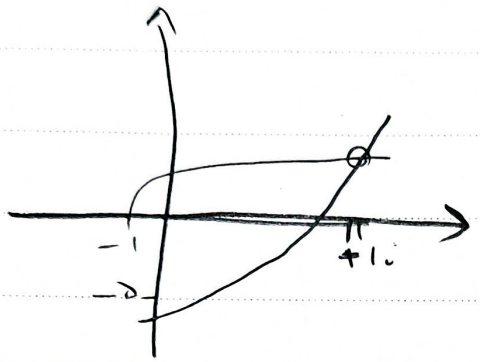
$$\frac{3\sqrt{a+1} - \sqrt{a^2-1} - \sqrt{a^2-1} - 3\sqrt{a+1}}{\underbrace{9-(a-1)}_{10-a}} = \sqrt{a-1}$$

Date: / / Sat Sun Mon Tue Thu Wed Fri Subject:

$$\frac{-2\sqrt{m^2-1}}{10-m} = \sqrt{m-1} \longrightarrow -2\sqrt{m-1}\sqrt{m+1} = (10-m)\sqrt{m-1}$$

$$\sqrt{m-1} \neq 0$$

$$-2\sqrt{m+1} = 10-m \rightarrow \sqrt{m+1} = \frac{m}{2} - 5 \longrightarrow$$ یک ریشه دارد (۲)



$$\frac{1}{\sqrt{2-m}+2} - \frac{1}{2-\sqrt{2-m}} = \frac{2-m}{3\sqrt{2-m}}$$ (۵)

(ی)

$$\frac{1}{t+2} - \frac{1}{2-t} = \frac{-2t}{4-t^2} \qquad \frac{2-m}{3\sqrt{2-m}} = \frac{t^2}{3t} = \frac{t}{3}$$

$$\frac{-2t}{4-t^2} = \frac{t}{3} \longrightarrow -10 = 4-t^2$$

$$-10 = m+2 \longrightarrow m = -12$$ یک ریشه دارد

$$\frac{1}{m^2} + \frac{1}{(1-m)^2} = \frac{170}{9} \qquad m = \frac{1}{2} + t$$ (۷)

$$\frac{1}{(\frac{1}{2}+t)^2} + \frac{1}{(\frac{1}{2}-t)^2} = \frac{170}{9} \longrightarrow \frac{\frac{1}{4}+t^2-t+\frac{1}{4}+t^2+t}{(\frac{1}{4}-t^2)^2}$$ (ی)

$$\frac{2(\frac{1}{8}+t^2)}{(\frac{1}{4}-t^2)^2} = \frac{170}{9} \longrightarrow \frac{9}{4}+9t^2$$

$$t^4 + \frac{1}{16} - \frac{t^2}{2}$$

$$\left.\begin{array}{l} 272t^2 - 194t^2 + 11 = 0 \\ \rightarrow \Delta = 144 \end{array}\right\}$$

$$t^2 = \frac{194 \pm 144}{544} \longrightarrow t = \pm\frac{1}{4}, \frac{\pm\sqrt{55}}{10}$$

$$m = \frac{1}{2} + t \longrightarrow m = \frac{1}{4}, \frac{3}{4}, \frac{1}{2} + \frac{\sqrt{55}}{10}, \underbrace{\frac{1}{2} - \frac{\sqrt{55}}{10}}$$

---

۲ = تعداد

Date: / / Sat Sun Mon Tue Thu Wed Fri Subject:

(۷)

$\sqrt{x+\sqrt{-x^3+4x^2+25x-100}}+\sqrt{x^2+\sqrt{-x^2+6x-8}}=x+2$

$-(x-4)(x^2-25) \rightarrow -(x-4)(x-5)(x+5) \geq 0$

$(x-4)(x-5)(x+5) \leq 0$ — -5, 4, 5: $- + - +$

(II) $x \in (-\infty, -5] \cup [4, 5]$ (I) $x \in [2, 4]$ — 2, 4: $+ - +$

$-x^2+6x-8 = -(x-2)(x-4) \geq 0 \rightarrow (x-2)(x-4) \leq 0$

$I \cap II = \{4\} \xrightarrow{x=4} \sqrt{4+\sqrt{0}}+\sqrt{16+\sqrt{0}} = 2+4 = 6$ ✓

معادله تنها یک جواب دارد $x = \boxed{4}$

---

(۸)

$y=|x+2|+|x-1|$ $3y+x=17$

$y=\frac{17-x}{3}$

$2x+1$ $x \geq 1$ $\rightarrow 2x+1=\frac{17-x}{3} \rightarrow x=2, y=5 \rightarrow B=(2,5)$

3 $-2 \leq x \leq 1$

$-2x-1$ $x \leq -2$ $\rightarrow -2x-1=\frac{17-x}{3} \rightarrow x=-4$, $y=7$, $A=(-4,7)$

$AB=\sqrt{(2+4)^2+(5-7)^2}=2\sqrt{10}$ (۴۰)

(۴)

---

(۹)

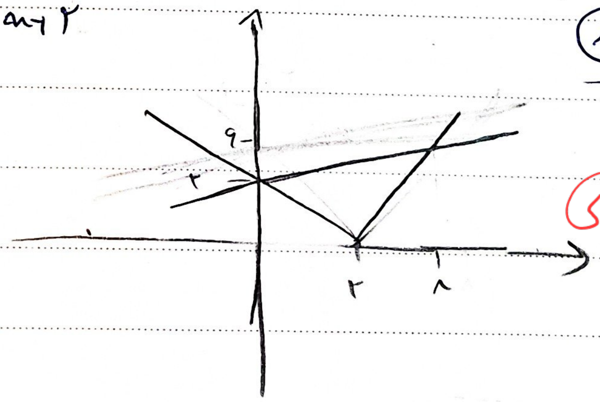
$y=\sqrt{x^2-4x+4}$ $y=\frac{1}{2}x+2$

$y=|x-2|$

$x \geq 2$

$x-2=\frac{1}{2}x+2 \rightarrow x=8, y=6$

$2-x=\frac{1}{2}x+2 \rightarrow x=0, y=2$



(۴)

2	0	1
0	2	1
8	6	1

$\rightarrow \frac{1}{2}(16+12+0-4-0-0)=12$

24

Date: / / Sat Sun Man Tue Thu Wed Fri Subject:

$$\left.\begin{array}{l} \frac{1}{B}+\frac{1}{E}=\frac{1}{20} \\ B+9=E \end{array}\right\} \rightarrow \frac{1}{B}+\frac{1}{B+9}=\frac{1}{20}$$

(10)

(5)

$$\frac{B+B+9}{B(B+9)}=\frac{1}{20} \rightarrow B^2-9B=40B+180$$

$$B^2-49B-180=0 \rightarrow \Delta=841 \rightarrow B=\frac{49\pm 29}{2}=\frac{78}{2}=39$$

(39)