نام و نام خانوادگی: کیمیا رحیمی — شماره پاسخنامه تکلیف ۱۸ — گروه: یازدهم دختر A

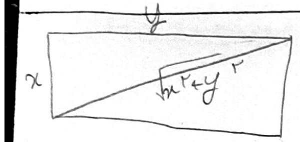
۱

$$\frac{l}{w}=\frac{۵}{۴} \Rightarrow l_۲=l+x \Rightarrow \frac{l+x}{w}=\frac{w+l+x}{l+x}$$

$$w=\frac{۴}{۵}l,\quad l=\frac{۵}{۴}w \Rightarrow \frac{\frac{۱+\sqrt{۵}}{۲}\cancel{w}\times\cancel{w}}{\cancel{w}\times\frac{۵}{۴}\cancel{w}}=\frac{\frac{۱+\sqrt{۵}}{\cancel{۲}}}{\frac{۵}{\cancel{۴}\,۲}}=\frac{۲+۲\sqrt{۵}}{۵}$$

$$l+x=\frac{۱+\sqrt{۵}}{۲}w$$

۲



$$\frac{\sqrt{x^۲+y^۲}}{y}=\frac{۱+\sqrt{۵}}{۲} \Rightarrow \sqrt{x^۲+y^۲}=\frac{۱+\sqrt{۵}}{۲}y$$

$$\xRightarrow{\text{توان دو}} x^۲+y^۲=\frac{۳+\sqrt{۵}}{۲}y^۲ \longrightarrow x^۲=\frac{۳+\sqrt{۵}-۲}{۲}y^۲$$

$$\frac{y^۲}{x^۲}=\frac{۲}{۱+\sqrt{۵}}$$

$۱+۲\sqrt{۵}+۵$

۳

$$۳a+\sqrt{۲a^۲+۴a}=۲$$

$$\sqrt{۲a^۲+۴a}=۲-۳a \xrightarrow{\text{توان دو}} ۲a^۲+۴a=۴-۱۲a+۹a^۲$$

$$\Rightarrow ۷a^۲-۱۶a+۴=۰ \longrightarrow a^۲-۱۶a+۲۸=۰ \longrightarrow (۷a-۲)(a-\tfrac{۱۴}{۷}) \Rightarrow \boxed{a=\tfrac{۲}{۷}}\ \text{ق ق},\ \boxed{a=۲}\ \text{غ ق ق}$$

$$\frac{a+۱}{a}=\frac{\frac{۲}{۷}+\frac{۷}{۷}}{\frac{۲}{۷}}=\frac{\frac{۹}{\cancel{۷}}}{\frac{۲}{\cancel{۷}}}=\boxed{۴/۵}$$

۴

$$\frac{\sqrt{x+۱}}{\sqrt{x-۱}+۳}-\frac{\sqrt{x+۱}}{۳-\sqrt{x-۱}}=\frac{x-۱}{\sqrt{x-۱}}\times\frac{\sqrt{x-۱}}{\sqrt{x-۱}} \Rightarrow \frac{\cancel{۳\sqrt{x+۱}}-\sqrt{x^۲-۱}-\sqrt{x^۲-۱}-\cancel{۳\sqrt{x-۱}}}{۹-(x-۱)}=\sqrt{x-۱}$$

$$\Rightarrow \frac{-۲\sqrt{x^۲-۱}}{-x+۱۰}=\sqrt{x-۱} \Rightarrow \frac{-۲\times\cancel{\sqrt{x-۱}}\times\sqrt{x+۱}}{-x+۱۰}=\cancel{\sqrt{x-۱}} \Rightarrow -۲\sqrt{x+۱}=-x+۱۰$$

تعداد جواب

$$۴(x+۱)=x^۲-۲۰x+۱۰۰ \Rightarrow x^۲-۲۴x+۹۶=۰$$

$۲\times۲\times۲ \quad ۵۷۶-۳۸۴$

۵

$$\frac{۱}{\sqrt{۲-x}+۲}-\frac{۱}{۲-\sqrt{۲-x}}=\frac{۲-x}{۵\sqrt{۲-x}} \Rightarrow \frac{\cancel{۲}-\sqrt{۲-x}-\sqrt{۲-x}-\cancel{۲}}{۴-(۲-x)}=\frac{۲-x\times\sqrt{۲-x}}{۵(۲-x)}$$

$$\frac{-۲\cancel{\sqrt{۲-x}}}{۲+x}=\frac{(۲-x)(\cancel{\sqrt{۲-x}})}{۱۰-۵x} \Rightarrow -۲۰+۱۰x=۴-x^۲$$

$$x^۲+۱۰x-۲۴=۰$$

$$(x-۲)(x-۱۲)=۰$$

$\boxed{x=۱۲}$

$x=۲$ غ ق ق

(6)

$$\frac{1}{x^2}+\frac{1}{(1-x)^2}=\frac{160}{9} \Rightarrow \left(\frac{1}{x}+\frac{1}{1-x}\right)^2-2\left(\frac{1}{x-x^2}\right)=\frac{160}{9}$$

$$\Rightarrow \left(\frac{1}{x-x^2}\right)^2-2\left(\frac{1}{x-x^2}\right)=\frac{160}{9} \Rightarrow t^2-2t+1=\frac{169}{9}$$

$$(t-1)^2=\frac{169}{9}$$

$$t-1=\frac{13}{3} \Rightarrow t=\boxed{\frac{16}{3} \text{ یا } t=-\frac{10}{3}}$$

$$\Rightarrow \frac{16}{x-x^2}=\frac{16}{3} \rightarrow 3=16x-16x^2$$

$\frac{9}{3}=\boxed{3}$ ← قبول

(7)

$x+2 \geq 0 \rightarrow x \geq -2$ (1)

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

$$-x^3+4x^2+25x-100 \geq 0 \rightarrow -x^2(x-4)+25(x-4) \geq 0 \rightarrow (-x^2+25)(x-4) \geq 0$$

$-5 \quad 4 \quad 5$

$+ \quad - \quad + \quad -$ $\rightarrow (-\infty,-5] \cup [4,5]$ (3)

(1) ∩ (2) ∩ (3) — شرایط معادله $\boxed{4}$

(8)

$-2 \quad 1$ $\qquad y=\frac{17-x}{3}$

$-2x-1 \quad | \quad 3 \quad | \quad 2x+1$

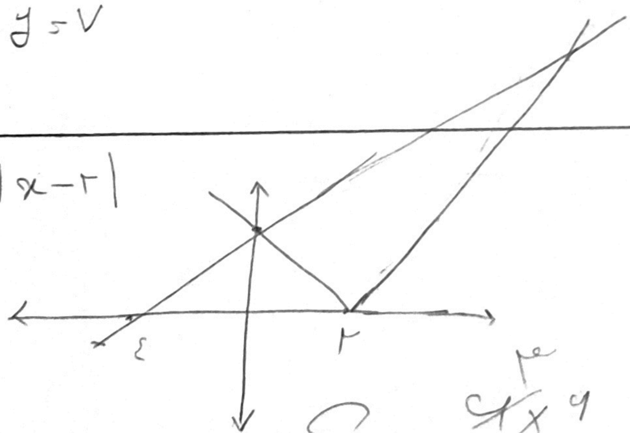
$2x+1=\frac{17-x}{3} \Rightarrow x=2, \; y=5$ $\qquad AB=\sqrt{36+4}=\boxed{2\sqrt{10}}$

$-2x-1=\frac{17-x}{3} \Rightarrow x=-4, \; y=7$

(9)

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

$y=\frac{1}{2}x+2$



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

$-\frac{1}{2}x=-4 \rightarrow \boxed{x=8} \rightarrow y=4$

$$S=\frac{\cancel{4}^{2}\times 9}{\cancel{2}}=18$$

(10)

$$\frac{1}{x}+\frac{1}{x+9}=\frac{1}{20} \rightarrow \frac{2x+9}{x^2+9x}=\frac{1}{20}$$

$$40x+180=x^2+9x \Rightarrow x^2-31x-180=0 \Rightarrow \frac{31\mp 41}{2} = \boxed{36} \text{ or } \cancel{-5}$$

$\Delta=41$

بهروز $\Rightarrow \boxed{x=36}$

فرهاد $\Rightarrow x+9=45$