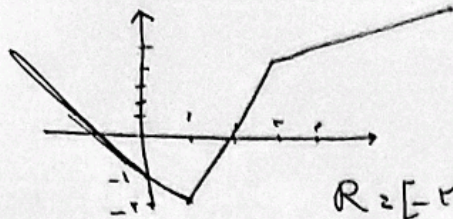


نام و نام خانوادگی پاسخنامه تشریحی تکلیف شماره کلاس (همه چیز)

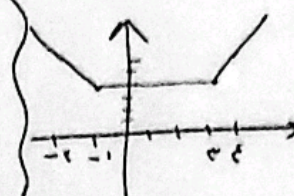
الف) $a = z \quad z \geq 0, z \neq 2 \quad y = \frac{z+1}{z-2}$ $y(z-2) = z+1 \rightarrow yz - 2y = z+1 \rightarrow z(y-1) = 2y+1 \rightarrow z = \frac{2y+1}{y-1}$ $z \geq 0 \Rightarrow \frac{2y+1}{y-1} \geq 0 \quad y = -\frac{1}{2} \text{ یا } 1 \rightarrow y \leq -\frac{1}{2} \text{ یا } y > 1 \Rightarrow (-\infty, -\frac{1}{2}] \cup (1, +\infty)$ ب) $a \neq 0 \rightarrow z = a > 0 \rightarrow a^2 = a ^2 = z^2 \rightarrow y = \frac{z+1}{z} = 1 + \frac{1}{z} \quad z \geq 0$ $z + \frac{1}{z} \geq 2 \Rightarrow z + \frac{1}{z} - 2 = \frac{(z-1)^2}{z} \geq 0 \quad (z=1) \quad [1, +\infty)$	(۲)
$a \neq 2 \rightarrow y(a+2) = a^2 + 2a - 2 \rightarrow a^2 + (2-y)a - (2+2y) = 0$ $\Delta \geq 0 \Rightarrow (2-y)^2 + 4(2+2y) \geq 0 \rightarrow y^2 + 8y + 12 \geq 0 \rightarrow (y+4)(y+3) \geq 0$ $\Rightarrow y \leq -4 \text{ یا } y \geq -3 \Rightarrow (-\infty, -4] \cup [-3, +\infty)$	(۲) ۲
داده $\rightarrow m^2 - m + 1 = (m - \frac{1}{2})^2 + \frac{3}{4} \rightarrow (m - \frac{1}{2})^2 + \frac{3}{4} > 0 \Rightarrow D = \mathbb{R}$ بر $\rightarrow m^2 - m + \frac{1}{2} = (m - \frac{1}{2})^2 \rightarrow f(m) = \frac{(m - \frac{1}{2})^2}{(m - \frac{1}{2})^2 + \frac{3}{4}} \quad z = (m - \frac{1}{2})^2 \geq 0$ $\frac{z}{z + \frac{3}{4}} \geq 0 \Rightarrow y \geq 0 \quad \text{منه} \rightarrow 0 \leq y < 1 \rightarrow m = \frac{1}{2} \checkmark \quad m \neq 1$ $\rightarrow R = [0, 1) \checkmark$	(۲) ۳
الف) $\rightarrow -m^2 + 5m - 1 = (m^2 - 5m + 4) + 2 \rightarrow m - (m-2)^2$ $m - (m-2)^2 \geq 0 \rightarrow 0 < y < 2 \xrightarrow{f} 0 \leq y \leq \sqrt{3} \rightarrow R = [0, \sqrt{3}] \checkmark$ ب) $2m^2 - 8m = 2(m^2 - 4m) = 2[(m-2)^2 - 4] \rightarrow 2(m-2)^2 - 8$ $\rightarrow (m-2)^2 \geq 0 \rightarrow 2(m-2)^2 - 8 \geq -8 \rightarrow 2m^2 - 8m \in [-8, +\infty)$ $\sqrt{f} \quad f - 4 = -2 \rightarrow R = [-2, +\infty) \checkmark$	(۲) ۴
الف) $\rightarrow$ برآن $\rightarrow$ هر دو فرد $\rightarrow$ چون زوج $\rightarrow$ الف ب) $\frac{a^2+1}{a} > 0 \rightarrow a^2+1 > 0 \rightarrow a > 0 \rightarrow \frac{a^2+1}{a} = a + \frac{1}{a} \quad m \geq$ $\rightarrow m + \frac{1}{m} \geq 2 \rightarrow \frac{m^2+1}{m} \in [2, +\infty) \rightarrow [2, 2\sqrt{2}, +\infty) \rightarrow [1, 2] \checkmark$	(۲) ۵

الف) $\frac{0 \ 1 \ 2 \ 4}{-1 \ -2 \ 5 \ 6}$



$R_2[-2, 4]$

ب) $\frac{-2 \ -1 \ 2 \ 4}{4 \ 6 \ 8 \ 9}$



$R_2[2, 4]$

(2)

6

$m = -2 \text{ to } 2 \xrightarrow{m \leq -2} |m-2| = 2-m \rightarrow (m-2) - (m+2) = -4$
 $|m+2| = -m-2 \rightarrow (m-2) - (m+2) = -4$

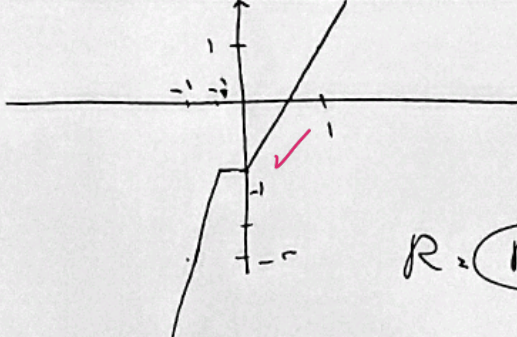
5

$\rightarrow 4 \leq 1 \rightarrow \emptyset$

7

$-2 \leq m \leq 2 \xrightarrow{m \leq -2} |m-2| = 2-m \rightarrow 2-m - (m+2) \leq 1 \rightarrow -2m \leq 1 \rightarrow -\frac{1}{2} \leq m \leq 2$
 $|m+2| = m+2 \rightarrow (m-2) - (m+2) = -4 \rightarrow -4 \leq 1 \checkmark \rightarrow [2, 4]$

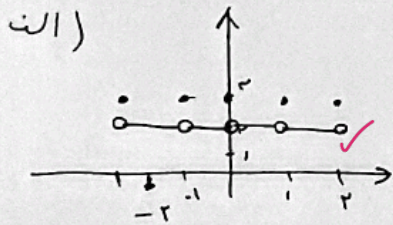
$\frac{-1 \ -\frac{1}{2} \ 0 \ 1}{-2 \ -1 \ -1 \ 1}$



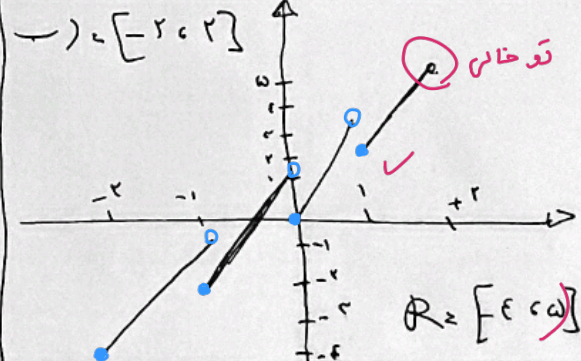
$R_2[0, 1]$

(2)

8



$R_2[2, 4]$



$R_2[2, 4]$

(2, 5)

9

الف) $\frac{-1 \ 2}{1 \ 1} \rightarrow \frac{1}{2} \rightarrow (\frac{1}{2})^2 - \frac{1}{2} + 1 \rightarrow \frac{1}{4} - \frac{1}{2} + 1 = \frac{3}{4} \Rightarrow R_2[\frac{3}{4}, 2]$

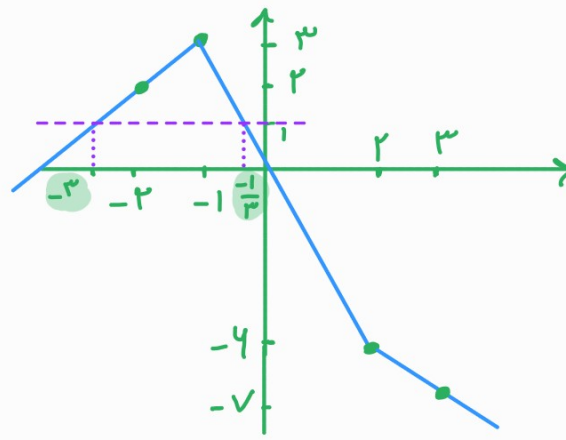
(2)

10

ب) $\frac{1 \ 2}{0 \ 1} \rightarrow \frac{1}{2} \rightarrow (\frac{1}{2})^2 - \frac{1}{2} + 1 \rightarrow \frac{1}{4} - \frac{1}{2} + 1 = \frac{3}{4} \Rightarrow R_2[1, 2]$

$$\begin{cases} -u - r & u \geq r \\ -ru & -1 \leq u \leq r \\ u + r & u \leq -1 \end{cases}$$

$$R_y = (-\infty, -r] \cup [-\frac{1}{r}, +\infty)$$



-v