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امتحان عباسیان دهه دهم، ضریب 4

1) A. $x^3 - 3x^2 + 3x \rightarrow \mathbb{R}$ توان فرد

B. $y = \frac{1}{x^2 - 2x} = yx^2 - 2xy = 1 \Rightarrow yx^2 - 2xy - 1 = 0$

$\Delta = 4y^2 - 4(y)(-1) = 4y^2 + 4y > 0$

$4y(y+1) > 0 \Rightarrow y < -1 \text{ or } y > 0 \Rightarrow R = (-\infty, -1] \cup (0, +\infty)$

2) الف) $x^2 - 4x + 1$ $\rightarrow -\frac{b}{ca} = -\frac{-4}{1} = 4$ (2)

$4 - \frac{8}{1} + 1 = 6$ $a > 0 \rightarrow \min [6, +\infty)$

ب) $-x^2 + 4x + 3$ $\rightarrow \max$

$\rightarrow -\frac{b}{ca} = -\frac{4}{-1} = 4 \xrightarrow{R_f} (-\infty, 4]$

$-9 + 16 + 3 = 10$

ج) $\sqrt{x^2 - 4x - 4}$

$\Rightarrow \sqrt{(x-2)^2 - 8}$

$-\frac{b}{ca} = -\frac{-4}{1} = 4 \Rightarrow \sqrt{[-4, +\infty)} \Rightarrow [0, +\infty)$

$y = \frac{4 - 16 - 4}{-4} = -1$

د) $y = \sqrt{4x - x^2}$ $\Rightarrow \max$ $a < 0 \rightarrow \max$

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

$-\frac{b}{ca} = -\frac{4}{-1} = 4 \xrightarrow{R_f} [0, 4] \Rightarrow \sqrt{[-\infty, 4]} = \sqrt{[0, 4]}$

3) الف) $\mathbb{R}$

$\rightarrow \mathbb{R}$

$\mathbb{Z} = \sqrt{\mathbb{R}} = [-9 + \infty]$

$\mathbb{Z} = \mathbb{R}^c \quad (n^2 - 5n^c + 4n + 1)^c$
 $\Rightarrow [0, 9 + \infty)$

4) الف) $y = \frac{3n+1}{n-2} \rightarrow \mathbb{R} - \{3\}$

5)
 $yn - cy = cn + 1$
 $-cy = cn - yn + 1$
 $-cy = n(c - y) + 1$
 $-cy - 1 = n(c - y)$
 $\frac{cy + 1}{c - y} \rightarrow \mathbb{R} - \{c\}$

$\hookrightarrow \frac{cn+1}{n+1} \rightarrow a=c \quad \mathbb{R} - \{c\}$
 $c=1$

5) الف) $\sqrt{\frac{cn+1}{n+1}} \xrightarrow{c(n+c)} \sqrt{\mathbb{R} - \{c\}} = [0, 9 + \infty) - \{\sqrt{c}\}$

5) $\sqrt{\frac{cn+1}{c-n-n+c}} \rightarrow \sqrt{\mathbb{R} - \{c\}} \rightarrow [0, 9 + \infty)$

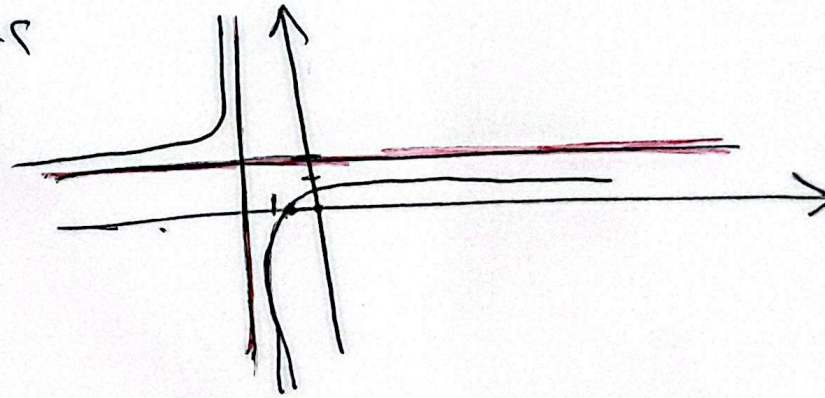
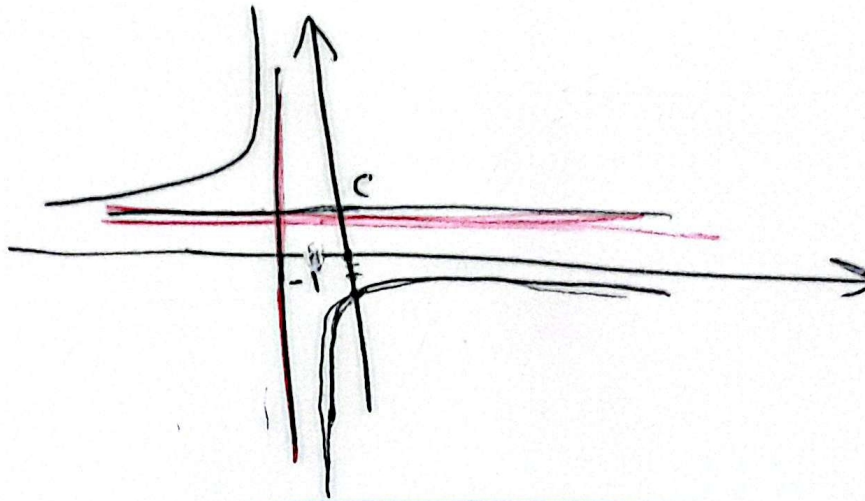
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افق $\rightarrow y = \frac{a}{c} = \frac{c}{1} = r$

$x \rightarrow y - 1$

$2- =$ مضارب قائم
 $2 =$ افق
 $y = \frac{m-1}{m+2}$ ب

$$z = -\frac{1}{r}$$



7) $y = \sin x + \frac{1}{\sin x} \xrightarrow{\text{cosec}} -\frac{1}{x} \rightarrow R_f = (-\infty, -1] \cup [1, +\infty)$

8) $y = \frac{x^4+1}{x^4} \Rightarrow x^4 + \frac{1}{x^4} \rightarrow (-\infty, -1] \cup [1, +\infty)$

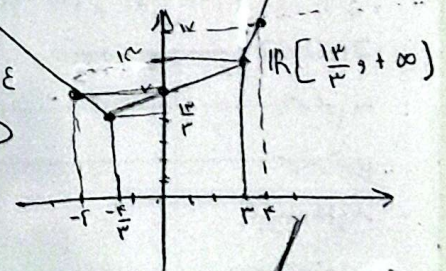
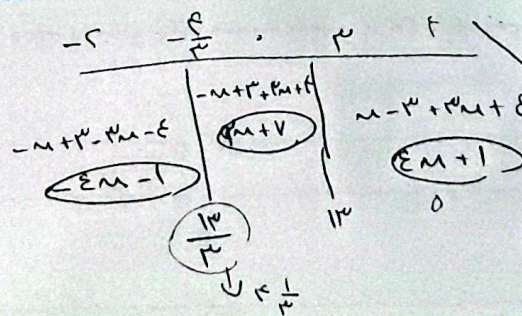
9) $y = \frac{\sqrt{x^2}}{\sqrt{x^2}} + \frac{1}{\sqrt{x^2}} \Rightarrow \sqrt{x} + \frac{1}{\sqrt{x}} \rightarrow (-\infty, -1] \cup [1, +\infty)$

10) $y = \sqrt{x} + \frac{1}{\sqrt{x}} \rightarrow [1, +\infty)$

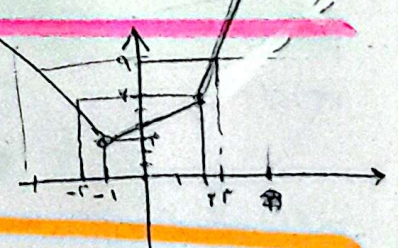
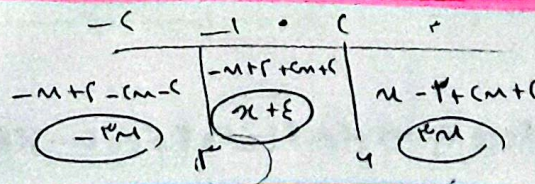
11) $y = x^c + \frac{1}{x^c + 1} \rightarrow \frac{1}{x} \rightarrow [\frac{1}{c}, +\infty)$

12) $y = \frac{x^c + 1}{\sqrt{x^c + 1}} \Rightarrow \frac{x^c + 1 + 1}{\sqrt{x^c + 1}} = \sqrt{x^c + 1} + \frac{1}{\sqrt{x^c + 1}} \Rightarrow R = [\frac{2}{c}, +\infty)$

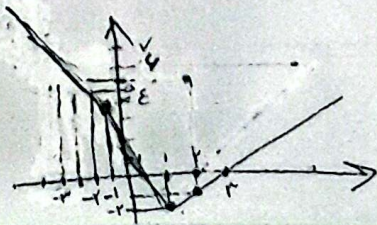
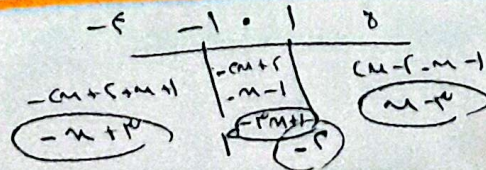
13) $y = |x-c| + |x+c|$
 $\frac{-c}{x} - \frac{c}{x} + \frac{2c}{x}$



14) $y = |x-c| + |x+c|$
 $R = [c, +\infty)$



15) $y = |x-c| + |x+1|$



$R = [-c, +\infty)$