$y=\frac{1}{x^2-4x} \rightarrow yx^2-4xy=1 \rightarrow yx^2-4xy-1=0$ $(-\infty,\frac{-1}{4}]\cup(0,+\infty)$

$x=\frac{4y\pm\sqrt{16y^2+4y}}{2y}$ $y\neq 0$ $\rightarrow 16y^2+4y\geq 0 \rightarrow y(16y+4)\geq 0$

$y=x^2-6x+2$ $\begin{cases} x_{min}=\frac{6}{2}=3 \\ y_{min}=9-18+2=-7 \end{cases}$ $[-7,+\infty)$

$y=-x^2+4x+2$ $\begin{cases} x_{max}=\frac{-4}{-2}=2 \\ y_{max}=-4+8+2=6 \end{cases} \rightarrow (-\infty,6]$

$y=\sqrt{x^2-6x+2}$ $\begin{cases} x_{min}=\frac{6}{2}=3 \\ y_{min}=-7 \end{cases}$ $R_y=\sqrt{[-7,+\infty)} \rightarrow R_y=[0,+\infty)$

$y=\sqrt{-x^2+4x+12}$ $\begin{cases} x_{min}=\frac{-4}{-2}=2 \\ y_{min}=16 \end{cases}$ $R_y=\sqrt{(-\infty,16]} \rightarrow R_y=[0,\sqrt{16}]$

$y=x^3+3x^2+2x+1 \rightarrow R_y=\mathbb{R}$

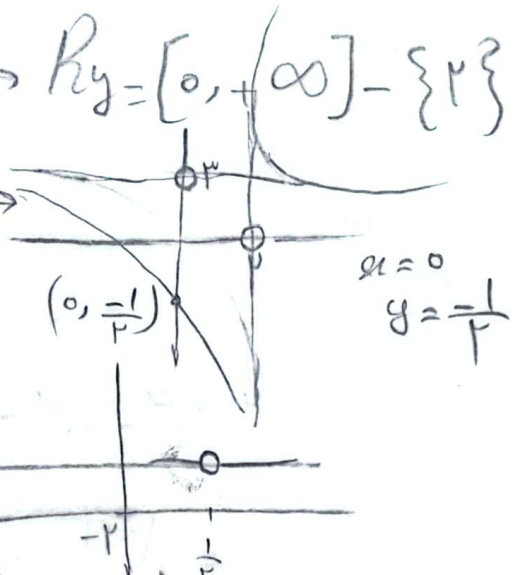
$y=\sqrt{x^4+4x^2+6x+1} \rightarrow R_y=[0,+\infty]$

$y=\frac{3x+1}{x-2} \rightarrow R_f=\mathbb{R}-\{3\}$

$y=\sqrt{\frac{4x+1}{x+3}} \rightarrow R_y=\sqrt{\mathbb{R}-\{4\}} \rightarrow R_y=[0,+\infty]-\{2\}$

$y=\frac{3x+1}{x-2} \rightarrow R_f=\mathbb{R}-\{3\}$

$D_f=\mathbb{R}-\{2\}$



$y=\frac{4x-2}{1-2x} \rightarrow \frac{2(2x-1)}{1-2x}=-2$

$y=\cos^2 x+\frac{1}{\cos^2 x} \rightarrow R_y=[2,+\infty)$

$y=\sqrt[3]{\frac{x^2+1}{x}} \rightarrow y=\sqrt[3]{x+\frac{1}{x}}$ $R_y=[2,+\infty)\cup(-\infty,-2]-\{0\}$

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(۱ $y=x^2-5 \qquad x^2=y+5 \rightarrow x=\pm\sqrt{y+5} \qquad D_x = y+5 \geq 0$

$y \geq -5$

$R_y \Rightarrow [-5,+\infty)$

$y=x^3+1 \rightarrow x^3=y-1 \rightarrow x=\sqrt[3]{y-1}$

(۲ $R_y=\mathbb{R}$

$y=x^2-4x+6 \rightarrow y=(x-2)^2+2 \rightarrow (x-2)^2=y-2$

$x-2=\sqrt{y-2} \rightarrow x=\pm\sqrt{y-2}+2 \rightarrow R_y=[2,+\infty)$

$y=x^2-5x+1 \rightarrow x^2-5x+1-y=0 \rightarrow x=\dfrac{5\pm\sqrt{25-4(1-y)}}{2}$ *

$25-4+4y \geq 0 \rightarrow 4y \geq -21 \rightarrow \left[\frac{-21}{4},+\infty\right)$

$y=\dfrac{x^2+3}{x^2-2} \rightarrow x^2+3=yx^2-2y \rightarrow x^2-yx^2=-2y-3$

$x^2(1-y)=-2y-3 \rightarrow x^2=\dfrac{-2y-3}{1-y} \rightarrow x=\pm\sqrt{\dfrac{-2y-3}{1-y}}$

	-1.5		1	
$+$	0	$-$		$+$

$-2y-3=0 \rightarrow -2y=3 \rightarrow y=\dfrac{-3}{2}$

$(-\infty,-1.5) \cup [1,+\infty)$

$y=\dfrac{2|x|+1}{|x|-4} = 2|x|+1=y|x|-4 \rightarrow 2|x|-y|x|=-5$

$|x|(2-y)=-5 \rightarrow |x|=\dfrac{-5}{2-y}$

	2	
$-$	0	$+$

$(-\infty,2)$

چون صورت ۵- ، مخرج منفی باشه تا حاصل + باشه