$$\sqrt{\frac{x^2-7x+6}{x^2-10x+16}} \geq 0 \qquad x^2-10x+16 \neq 0$$

1	2	6	8

$+ \quad - \quad + \quad - \quad +$

$$\frac{(x-6)(x-1)}{(x-2)(x-8)}$$

$$(-\infty \;\; 1] \cup (2 \;\; 6] \cup (8 \;\; +\infty)$$

ب) $$\frac{\sqrt{2x^2-5x+3}}{\sqrt{3x^2-7x+4}} \qquad 2x^2-5x+3 \geq 0 \qquad 3x^2-7x+4 > 0$$

$$\frac{(2x+1)(x-3)}{(3x-4)(x-1)} \Rightarrow$$

$-0{,}5 \quad 3$

$+ \quad - \quad +$

$1 \quad \frac{4}{3}$

$+ \quad - \quad +$

$-\frac{1}{2} \quad 1 \quad \frac{4}{3} \quad 3$

$$(-\infty \;\; -\tfrac{1}{2}] \cup [3 \;\; +\infty)$$

$$\sqrt{\frac{2x^2-5x+3}{3x^2-7x+4}} \geq 0 \qquad 3x^2-7x+4 \neq 0$$

$-\frac{1}{2} \quad 1 \quad \frac{4}{3} \quad 3$

$+ \quad - \quad + \quad - \quad +$

$$\Rightarrow (-\infty \;\; -\tfrac{1}{2}] \cup (1 \;\; \tfrac{4}{3}) \cup [3 \;\; +\infty)$$

$$\sqrt{x}+\sqrt{y-1}=\sqrt{3} \Rightarrow \sqrt{y-1}=\sqrt{3}-\sqrt{x} \Rightarrow y-1=3+x\underbrace{-2\sqrt{3}\sqrt{x}}_{}$$

مثبت

$$y=3+x-2\sqrt{3x}+1$$

$$y=4+x-2\sqrt{3x}$$

$$\sqrt{3x}\geq 0 \Rightarrow \underline{x\geq 0}$$

۸ بخش ب

$2x^2 + y^2 - 4x + 6y + k = 0$ $\quad (y+3)^2 + (2x^2 - 4x + k) = 0$ $\quad b^2 - 4ac = 0$

$9 + 2 = x$ $\quad \underbrace{(2x-2)(x-1)}_{k=2}$ $\quad 16 - 4(2k) = 0 \Rightarrow k = 2$

$f(x) \begin{cases} x^2 + 4x & , x \ge a \\ 2x + a + 2 & , x < a \end{cases}$ $\quad f(1) = ?$ $\quad a > 0$ $\quad a^2 + 4a = 2a + a + 2 \Rightarrow a^2 + a - 2 = 0$

$(a+2)(a-1) \Rightarrow 1 = a$

-2 $\quad a > 0$ ×

$x^2 + 4x \Rightarrow 5 = f(1)$

$f(x) = \begin{cases} 2x^2 - b & , |x+1| \ge 2 \\ a + 2x & , -\frac{3}{2} \le x \le -1 \end{cases}$ $\quad a + b =$ $\quad |x+1| \ge 2 \Rightarrow x + 1 \ge 2 \Rightarrow x \ge 1$

$18 - b = a - 6$ $\quad x + 1 \le -2 \quad x \le -3$

$24 = a + b$

$y = \sqrt{6x - a} + \sqrt{b - 2x}$ $\quad b - 6 = 12 - a = 0$ $\quad \frac{b}{a} = \frac{6}{12} = \frac{1}{2}$

$\sqrt{12 - a} \ge 0 + \sqrt{b - 6} \ge 0$ $\quad 6 \quad 12$

$y = \sqrt{\frac{x+1}{|x-3| \ne 0}} \ge 0 + \sqrt{\frac{6-x}{x^2+4x+4}}$ $\quad \frac{6}{+\ \phi\ -}$ $\quad D_f = [-1\ \ 6] - \{3\}$

$4 - 4(4) < 0$ ریشه ندارد

$\frac{-1 \quad 3}{-\ \phi\ +\ \phi\ +}$ $\quad -1 \quad 3 \quad 6$

$y = \sqrt{[x] - 4} + \sqrt{2 - [x]}$ $\quad [x] - 4 \ge 0 \Rightarrow [x] \ge 4 \quad [4, +\infty)$ $\quad 2 - [x] \ge 0 \Rightarrow [x] \le 2$ $\quad (-\infty\ \ 3)$

$\boxed{\text{تهی}}$ $\quad 3 \quad 4$

$y = \sqrt{\frac{x^2 - x - 6}{x^4 - 13x^2 + 36}}$ $\quad (x+2)(x-3)$ $\quad -2 \quad 3 \quad -2 \quad +2 \quad -3 \quad +3$ $\quad \frac{-3 \quad -2 \quad 2 \quad 3}{+\ \phi\ -\ \phi\ +\ \phi\ -\ \phi\ +}$

$(t-4)(t-9) \Rightarrow x^2 = 4 \quad x^2 = 9$ $\quad (-\infty\ -3) \cup (2\ +\infty) - \{3\}$

$y = \sqrt{\frac{x^3 - 2x^2 - 5x + 6}{x^3 + 2x^2 - 5x - 6}} \ge 0$

$x^3 - 2x^2 - 5x + 6 \div (x-1) = x^2 - x - 6$: $-x^3 + x^2$, $-x^2 - 5x + 6$, $+x^2 - x$, $-6x + 6$, $+6x - 6$, 0 $\quad (x+2)(x-3)(x-1)$ $\quad -2 \quad 3 \quad 1$

$x^3 + 2x^2 - 5x - 6 \div (x+1) = x^2 + x - 6$: $-x^3 - x^2$, $x^2 - 5x - 6$, $-x^2 - x$, $-6x - 6$ $\quad (x+1)(x-2)(x+3)$ $\quad -1 \quad 2 \quad -3$

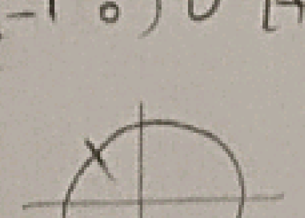
$\frac{-3 \quad -2 \quad -1 \quad 1 \quad 2 \quad 3}{+\ \phi\ -\ \phi\ +\ \phi\ -\ \phi\ +\ \phi\ -\ \phi\ +}$

$(-\infty\ -3) \cup [-2\ -1) \cup [1, 2) \cup [3, +\infty)$

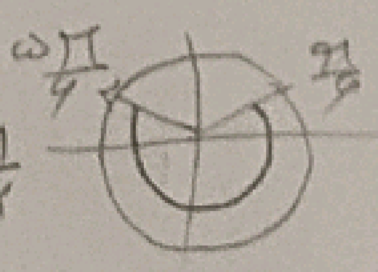
$y = \sqrt{[-x] - 2} \ge 0$ $\quad [-x] \ge 2 \Rightarrow (-\infty\ \ -2]$

$y = \frac{5x^4 + 6}{[x]^2 - 2[x] - 3 \ne 0} \Rightarrow ([x] - 3)([x] + 1) \Rightarrow \mathbb{R} - ([-1\ 0) \cup [3\ 4))$

$[3\ \ 4) \quad [-1\ \ 0)$



$y = \frac{\cot x + 1}{\tan x + 1 \ne 0}$ $\quad \mathbb{R} - \{\frac{k\pi}{2}, k\pi - \frac{\pi}{4}\}$ $\tan x \ne -1$



$y = \sqrt{1 - 4\sin^2 x} \ge 0$ $\quad 1 - 4\sin^2 x \ge 0 \Rightarrow 1 \ge 4\sin^2 x \Rightarrow \frac{1}{4} \ge \sin^2 x$ $\quad -\frac{1}{2} \le \sin x \le \frac{1}{2}$

$\mathbb{R} - (\frac{\pi}{6}\ \ \frac{5\pi}{6})$