

$$1) y = (n - P[P])^P = (P \times \frac{n}{P} - P[P])^P = [P(\frac{n}{P} - [P])]^P$$

$$\rightarrow 0 < \frac{n}{P} - [P] < 1 \xrightarrow{P} 0 < P(\frac{n}{P} - [P]) < P \xrightarrow{P} 0 < [P(\frac{n}{P} - [P])]^P < P^P$$

$$R_P = [0, P^P)$$

$$2) -\sin x + \log y - K = 0 \Rightarrow \log y = K + \sin x \Rightarrow y = 10^{K + \sin x} \xrightarrow{\sin = -1} y = 10^K$$

$$R_P = [10^K, 10^{K+1})$$

$$\sin = 1 \rightarrow y = 10^{K+1}$$

$$f(x) = \sqrt{\frac{x^P - K}{x - a}}$$

$$\frac{x^P - K}{x - a} \xrightarrow{x^P = 0} \frac{0 - K}{0 - a} = \frac{K}{a}$$

$$\xrightarrow{x^P = +\infty} \frac{+\infty}{+\infty} = 1$$

$$R_P = \sqrt{(-\infty, \frac{K}{a}] \cup (1, +\infty)} = (-\infty, \frac{K}{a}] \cup (1, +\infty)$$

$$a + b + c = 0 + \frac{K}{a} + 1 = \frac{a + K + a}{a} = \frac{a + K + a}{a}$$

مجموع جزیی است

$$15) 1) f(x) = x + \frac{1}{x} + P \sqrt{x + \frac{1}{x}} \quad \text{چون } x + \frac{1}{x} \geq 2 \quad x + \frac{1}{x} \geq 2 \quad -1 \leq \sin x \leq 1 \quad x + \frac{1}{x} \geq 2$$

$$x + \frac{1}{x} = 2 \Rightarrow x + \frac{1}{x} + P \sqrt{x + \frac{1}{x}} = 2 + P \sqrt{2}$$

$$R_P = [2 + P\sqrt{2}, +\infty)$$

$$2) y = (P - \sin x)(1 + \sin x) = P + P \sin x - \sin x - \sin^2 x = -\sin^2 x + P \sin x + P$$

$$\begin{aligned} -1 - P + P^2 &= 0 \\ -\sin^2 x + P \sin x + P &= 0 \\ -\frac{P}{4} &\downarrow \\ -1 + P + P^2 &= K \end{aligned} \rightarrow R_P = [0, K]$$

$$f(x) = -\frac{1}{x} x + 10 \quad x=1 \rightarrow -\frac{1}{1} + 10 = \frac{9}{1}$$

$$x=K \rightarrow -\frac{1}{K} + 10 = \frac{9}{K}$$

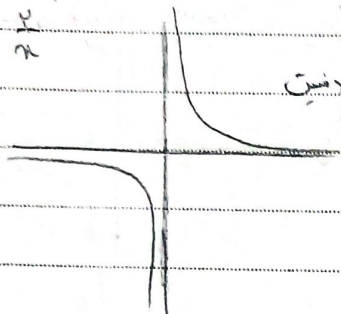
$$x=9 \rightarrow -\frac{1}{9} + 10 = \frac{89}{9} = 9.88$$

$$x=9 \rightarrow -\frac{1}{9} + 10 = \frac{89}{9} = 9.88$$

$$\text{حداکثر} = \left(\frac{9}{K} + 9 \right) \times 9 = \frac{100 \times 9}{K} = \frac{900 \times 9}{K} = \frac{8100}{K} = \frac{8100}{9} = 900$$

$$y = \frac{1}{x} + \frac{1}{x+1} + \frac{1}{x^2+x} = \frac{x+1}{x^2+x} + \frac{x}{x^2+x} = \frac{x+1+x}{x^2+x} \rightarrow y = \frac{2x+1}{x^2+x} = \frac{2(x+1)}{(x+1)x} = \frac{2}{x}$$

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



خبر نیست

$$y = \frac{2}{x} \xrightarrow{x=-1} y = \frac{2}{-1} = -2$$

خبر نیست

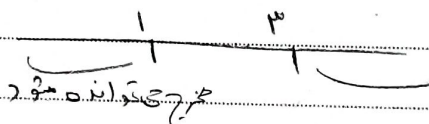
$$P = IR - \left\{ \begin{matrix} 2 \\ 0 \end{matrix} \right\}$$

$$a+b = 0 + (-2) = -2$$

$$10. f(x) = \frac{x - \sqrt{x} + 3}{x - \sqrt{x} + 1} \xrightarrow{\sqrt{x}=t} \frac{t^2 - t + 3}{t^2 - t + 1} = \frac{(t-1)(t-3)}{(t-1)^2} = \frac{t-3}{t-1} = \frac{\sqrt{x}-3}{\sqrt{x}-1}$$

$$\frac{\sqrt{x}-3}{\sqrt{x}-1} \xrightarrow{\sqrt{x}=0} \frac{0-3}{0-1} = 3$$

$$\xrightarrow{\sqrt{x} \rightarrow +\infty} \frac{+\infty}{+\infty} = 1$$



$$P = (-\infty, 1) \cup (3, +\infty)$$

$$15. f(x)=1 \rightarrow x - \sqrt{x} + 3 = x - \sqrt{x} + 1 \rightarrow \sqrt{x} - 2 = 0$$

$$x - \sqrt{x} + 3 = 3 \rightarrow x - \sqrt{x} + 3 = 3x - 4\sqrt{x} + 3$$

$$x - \sqrt{x} + 1$$

$$2x - 2\sqrt{x} = 0 \rightarrow 2x = 2\sqrt{x} \rightarrow x = 1, 0$$

$$\rightarrow \sqrt{x} = 2 \rightarrow x = 4$$

خبر نیست

خبر نیست

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$$P(x) = \frac{x^4 + 2x^2 - x - 2}{x^2 - 1} = \frac{(x^2+1)(x+2)}{x^2-1} = \frac{x+2}{x-1}$$

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$$P = IR - \{ \pm 2 \} \xrightarrow{x=1} f(x) = 1+2=3$$

$$\xrightarrow{x=-1} f(x) = -1+2=1$$

$$P = IR - \{ 1, 3 \}$$

$$1, 3 \in P$$

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