№ 5082 | $\log_7(2x^2+12)-\log_7(x^2-x+12)\geq\log_7(2-\frac{1}{x})$

ОДЗ:

$$\begin{cases} 2x^2+12>0 \\ x^2-x+12>0 \Rightarrow \frac{1}{x}<2 \Rightarrow x\in(-\infty;0)\cup(\frac{1}{2};+\infty) \\ 2-\frac{1}{x}>0 \end{cases}$$

$$\log_7(2x^2+12)-[\log_7(x^2-x+12)+\log_7(2-\frac{1}{x})]\geq 0$$

$$\log_7(2x^2+12)-\log_7[(x^2-x+12)\cdot(2-\frac{1}{x})]\geq 0$$

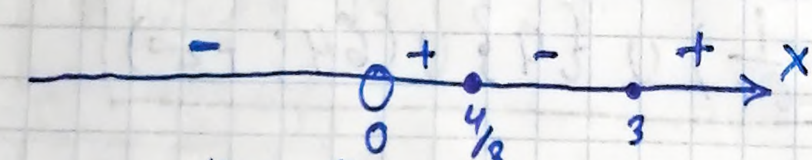
$$\log_7(2x^2+12)\geq\log_7(2x^2-3x-\frac{12}{x}+25)$$

$$(7-1)(2x^2+12-2x^2+3x+\frac{12}{x}-25)\geq 0$$

$$3x+\frac{12}{x}-13\geq 0$$

$$\frac{3x^2-13x+12}{x}\geq 0$$

$$\frac{(x-3)(x-\frac{4}{3})}{x}\geq 0$$



$x\in(0;\frac{4}{3}]\cup[3;+\infty)$

С учетом ОДЗ: $x\in(\frac{1}{2};\frac{4}{3}]\cup[3;+\infty)$

Ответ: $x\in(\frac{1}{2};\frac{4}{3}]\cup[3;+\infty)$