

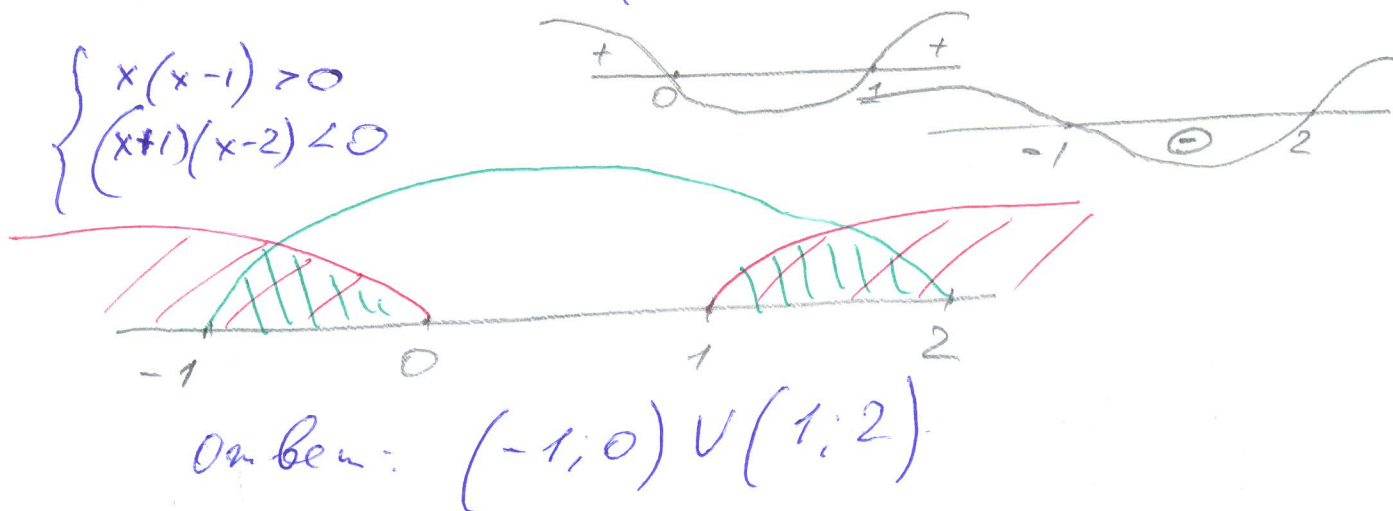
①
$$\begin{cases} x > 0 \\ x^2 + x + 1 < 1 \end{cases}$$

$$\begin{cases} x > 0 \\ x^2 + x < 0 \end{cases} \quad \begin{cases} x > 0 \\ x(x+1) < 0 \end{cases}$$

Решения нет.

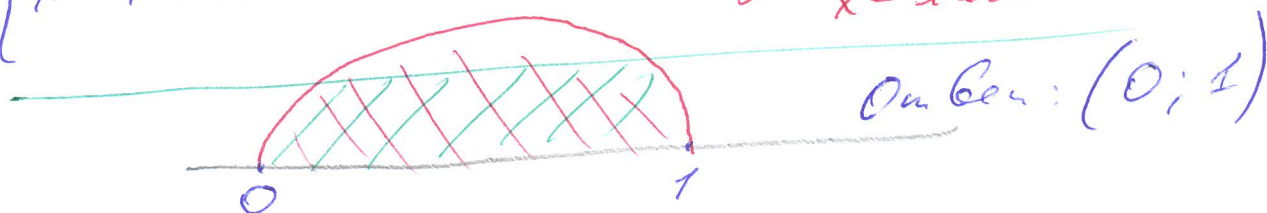
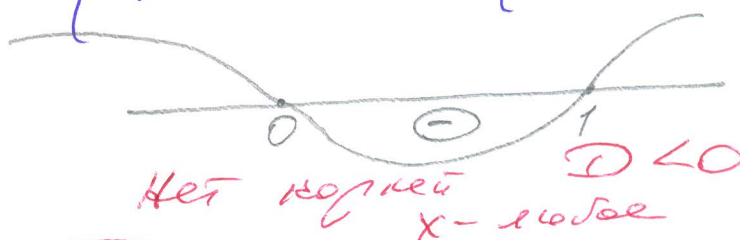
②
$$\begin{cases} x^2 - x > 0 \\ x^2 - x < 2 \end{cases}$$

$$\begin{cases} x(x-1) > 0 \\ x(x-1) < 2 \end{cases} \quad \begin{cases} x(x-1) > 0 \\ x^2 - x - 2 < 0 \end{cases}$$



③
$$\begin{cases} x^2 - x < 0 \\ -(x^2 - x) < 2 \end{cases} \quad \begin{cases} x(x-1) < 0 \\ -x^2 + x - 2 < 0 \end{cases} \quad \begin{cases} x(x-1) < 0 \\ x^2 - x + 2 > 0 \end{cases}$$

$$\begin{cases} x(x-1) < 0 \\ x^2 - x + 2 > 0 \end{cases}$$



④
$$\begin{cases} x^2 + 4x < 1 \\ x^2 + 4x > -1 \end{cases} \quad \begin{cases} x^2 + 4x - 1 < 0 \\ x^2 + 4x + 1 > 0 \end{cases}$$

$x_{1,2} = -2 \pm \sqrt{4+1} = -2 \pm \sqrt{5}$
 $x_{1,2} = -2 \pm \sqrt{4-1} = -2 \pm \sqrt{3}$
 $-2 - \sqrt{5} < x < -2 + \sqrt{5}$

$$\begin{cases} (x+2+\sqrt{5})(x+2-\sqrt{5}) < 0 \\ (x+2+\sqrt{3})(x+2-\sqrt{3}) > 0 \end{cases}$$

Ответ: $(-2-\sqrt{5}; -2-\sqrt{3}) \cup (-2+\sqrt{3}; -2+\sqrt{5})$