

② Найдите предел:

$$\begin{aligned} & \lim_{x \rightarrow +\infty} (\sqrt{x^2 - 2x - 1} - \sqrt{x^2 - 7x + 3}) = [\infty - \infty] = \\ & = \lim_{x \rightarrow +\infty} \left(\frac{(\sqrt{x^2 - 2x - 1} - \sqrt{x^2 - 7x + 3}) \cdot (\sqrt{x^2 - 2x - 1} + \sqrt{x^2 - 7x + 3})}{\sqrt{x^2 - 2x - 1} + \sqrt{x^2 - 7x + 3}} \right) \\ & = \lim_{x \rightarrow +\infty} \frac{(x^2 - 2x - 1 - x^2 + 7x - 3)}{\sqrt{x^2(1 - \frac{2}{x} - \frac{1}{x^2})} + \sqrt{x^2(1 - \frac{7}{x} + \frac{3}{x^2})}} = \\ & = \lim_{x \rightarrow +\infty} \frac{5x - 4}{x \cdot \sqrt{1 - \frac{2}{x} - \frac{1}{x^2}} + x \sqrt{1 - \frac{7}{x} + \frac{3}{x^2}}} = \lim_{x \rightarrow +\infty} \frac{5x - 4}{2x} = \\ & = \lim_{x \rightarrow +\infty} \frac{x(5 - \frac{4}{x})}{2x} = \frac{5}{2} \end{aligned}$$