

عمر

$$\lim_{x \rightarrow 2} \frac{x^2 - 2}{x^2 + ax + b} = -\infty$$

$$x^2 + ax + b = (x-2)^2 = x^2 - 4x + 4$$

$$b=4, a=-4 \rightarrow a+b=0$$

$$x^2 + ax + b = (x - \sqrt[3]{\epsilon})^2 = x^2 - \sqrt[3]{\epsilon}x + \sqrt[3]{\epsilon}$$

$$\left[\frac{b}{a} \right] = \left[\frac{\sqrt[3]{\epsilon}}{-\sqrt[3]{\epsilon}} \right] \left[\frac{\sqrt[3]{\epsilon}}{\sqrt[3]{\epsilon}} \right] \left[\frac{1}{\sqrt[3]{\epsilon}} \right] = -1$$

$$\lim_{x \rightarrow \frac{1}{\sqrt{r}}^+} \frac{-1 + a}{\frac{\sqrt{r}}{r}x + a + a} \rightarrow \frac{a-1}{a + \frac{1}{\sqrt{r}}}$$

$$\left[-\frac{1}{\sqrt{r}} \right] = -1$$

$$\lim_{x \rightarrow \frac{1}{\sqrt{r}}^-} \frac{-1 + a}{-\frac{\sqrt{r}}{r}x - a + a} \rightarrow \frac{a-1}{-\frac{\sqrt{r}}{r}x}$$

$$a < -\frac{1}{\sqrt{r}}$$

$$a + \frac{1}{\sqrt{r}} \approx 0 \rightarrow a \approx -\frac{1}{\sqrt{r}} \rightarrow \left[\frac{a}{a} \right] = \left[\frac{-1}{1} \right] = -1$$

$$\lim_{x \rightarrow \left(-\frac{1}{r}\right)^+} \frac{14x + 9}{r\epsilon x + 12} = \frac{-14 + 9}{0^+} = \frac{-5}{0^+} = +\infty$$

$$\lim_{x \rightarrow 2^+} \frac{x^2 - \epsilon}{x^2 - 1} = \frac{(x-1)(x+1)}{(x-1)(x+1)} = \frac{1}{1} = 1$$

$$\lim_{x \rightarrow 1} \frac{(x+1)(x+2)}{4(1+\sqrt{x})} = \frac{(1+1)(1+2)}{4(1+\sqrt{1})} = \frac{6}{8} = \frac{3}{4}$$

$$\lim_{x \rightarrow 0^-} \frac{\sqrt{1+x} - \sqrt{1-x}}{\sqrt{1-\cos x}} = \frac{\sqrt{1+x} - \sqrt{1-x}}{\sqrt{1-(1-\frac{x^2}{2})}} = \frac{(1+x) - (1-x)}{\sqrt{\frac{x^2}{2}}(\sqrt{1+x} + \sqrt{1-x})} = \frac{2x}{\sqrt{\frac{x^2}{2}}(\sqrt{1+x} + \sqrt{1-x})} = \frac{2}{\sqrt{2}(\sqrt{1+x} + \sqrt{1-x})} = \frac{\sqrt{2}}{2}$$

$$\lim_{x \rightarrow 1} \frac{1+k}{x^2} = \frac{1+k}{1} = 1+k$$

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