

$\lim_{x \rightarrow 2} \frac{2x - 5}{x^2 + ax + b} \Rightarrow \frac{-1}{0^+} \Rightarrow -\infty$ $\Rightarrow a + b = 0$	۱
$\lim_{x \rightarrow \sqrt[3]{4}} \frac{x}{x^2 + ax + b} = +\infty \Rightarrow \frac{\sqrt[3]{4}}{0^+} \Rightarrow$ ریشه مضاعف خارج است $(x - \sqrt[3]{4})^2 \Rightarrow x^2 - 2\sqrt[3]{4}x + \sqrt[3]{4}^2 \Rightarrow \left[\frac{\sqrt[3]{4}^2}{-2\sqrt[3]{4}} \right] \Rightarrow \left[-\frac{\sqrt[3]{4}}{2} \right] \Rightarrow -\frac{1}{2}$ $\Rightarrow$ خارج از تکب بزرگتر $-\frac{1}{2} \Rightarrow \frac{-1}{\sqrt[3]{4}}$	۲
$\lim_{x \rightarrow (\frac{1}{3})^+} \frac{[-x] + a}{ \frac{\sqrt{x}}{3}x + a + a} \xrightarrow{[0^-] \Rightarrow -1} \frac{a-1}{ \frac{1}{3} + a + a} \xrightarrow{\text{صورت باید مثبت باشد} \rightarrow \frac{1}{3} + a + a = 0 \Rightarrow a = -\frac{1}{6}}$ $\Rightarrow [-\frac{1}{6}] = -1$	۳
$\lim_{x \rightarrow (-\frac{1}{4})^+} \frac{14x - [-\frac{1}{x^2}]}{24x + [\frac{1}{x^2}]} \Rightarrow \frac{-1 - [-1^-]}{-12 + [11^+]} \Rightarrow \frac{1}{0^+} \Rightarrow +\infty$ $\hookrightarrow$ ساقین داخل حالت $x > -\frac{1}{4} \Rightarrow x^2 < \frac{1}{4} \Rightarrow \frac{1}{x^2} > 4$	۴
$\lim_{x \rightarrow 2^+} \frac{x^2 - 4}{x^3 - [x^3]} \Rightarrow \frac{0}{0} \Rightarrow \frac{(x-2)(x+2)}{(x-2)(x^2 + 4x + 4)} \Rightarrow \lim_{x \rightarrow 2^+} \frac{x+2}{x^2 + 4x + 4} \Rightarrow \frac{4}{12} = \frac{1}{3}$ $\downarrow$ داخل را رقیق می‌شود	۵

$$\lim_{u \rightarrow -1} \frac{u^4 + 10u + 19}{11 + 4^{\sqrt{u}}} \Rightarrow \frac{0}{0} \xrightarrow{\text{hop}} \frac{4u + 10}{4 \times \frac{1}{4^{\sqrt{u}}}} \Rightarrow \frac{-4}{\frac{1}{4}} \Rightarrow -16 \quad \text{✓}$$

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$$\lim_{u \rightarrow 0^-} \frac{\sqrt{1+2u} - \sqrt{1-u}}{\sqrt{1-\cos u}} \Rightarrow \frac{0}{0} \Rightarrow \frac{(\sqrt{1+2u} - \sqrt{1-u})(\sqrt{1+2u} + \sqrt{1-u})}{\sqrt{1-\cos u} \times (\sqrt{1+2u} + \sqrt{1-u})} \Rightarrow \frac{F_u}{\sqrt{1-\cos u} \times (\sqrt{1+2u} + \sqrt{1-u})}$$

$$\downarrow$$

$$\sqrt{1-\cos u} \Rightarrow \sqrt{2\sin^2(\frac{u}{2})} \Rightarrow -\sin \frac{u}{2} \times \sqrt{2}$$

$$\lim_{u \rightarrow 0^-} \frac{F_u}{-\sqrt{2}\sin \frac{u}{2}} \times \lim_{u \rightarrow 0^-} \frac{1}{\sqrt{1+2u} + \sqrt{1-u}} \Rightarrow \frac{1}{\sqrt{1+0} + \sqrt{1-0}} \Rightarrow \frac{1}{2}$$

$$\Rightarrow \frac{-\sqrt{2}}{\frac{1}{2}} \Rightarrow -2\sqrt{2} \quad \text{✓}$$

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$$\lim_{u \rightarrow 0} \frac{K + \cos(\sqrt{a}u)}{Ku^r} = r \Rightarrow \frac{0}{0} \Rightarrow \lim_{u \rightarrow 0} (K + \cos(\sqrt{a}u)) = 0 \Rightarrow K + \cos(0) = 0 \Rightarrow K + 1 = 0 \Rightarrow K = -1$$

$$\Rightarrow \lim_{u \rightarrow 0} \frac{1 - \cos(\sqrt{a}u)}{u^r} = r \quad \xrightarrow{\text{هم‌ارزی}} \quad \lim_{u \rightarrow 0} \frac{\frac{au^r}{r}}{u^r} \Rightarrow \frac{a}{r} = r \Rightarrow a = r^2$$

$$\frac{a}{K} = \frac{r^2}{-1} = -r^2$$

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$$\lim_{u \rightarrow 2a^+} \frac{\sqrt{u-2a} + \sqrt{u} - \sqrt{4a}}{\sqrt{u^2-4a^2}} \Rightarrow \frac{0}{0} \Rightarrow \lim_{u \rightarrow 2a^+} \frac{\sqrt{u-2a}}{\sqrt{(u-2a)(u+2a)}} + \frac{\sqrt{u} - \sqrt{4a}}{\sqrt{(u-2a)(u+2a)}} \Rightarrow$$

$$\downarrow \quad \downarrow$$

$$\frac{1}{\sqrt{u+2a}} \quad \frac{0}{0} \Rightarrow \text{صفر}$$

$$\Rightarrow \frac{1}{\sqrt{4a}} \Rightarrow \frac{1}{2\sqrt{a}} \quad \text{✓}$$

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$$\lim_{u \rightarrow (-1)} \frac{1-K[u]}{u^r-1} = -\infty \Rightarrow \frac{1+K}{0^-} \Rightarrow 1+K > 0 \Rightarrow K > -1$$

$$\Rightarrow \frac{1+K}{0^+} \Rightarrow 1+K < 0 \Rightarrow K < -1 \Rightarrow K < -1$$

$$\Rightarrow -1 < K < -\infty \Rightarrow -\pi < K < -\frac{\pi}{r} \quad \text{✓}$$

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امیرکی جانشین

سیاسی انشا