الیسن محمدی

(۱)

$$\lim_{x\to 2} \frac{2x-a}{x^2+ax+b} = -\infty \rightarrow \frac{-1}{x^2+ax+b} = -\infty$$

x^2+ax+b صفر می‌شود

$a+b=0$

$\frac{-1}{(x-2)^2}$

x^2+4-4x

$a=-4 \quad b=4$

(۲)

$$\lim_{x\to \sqrt[3]{2}} \frac{x}{x^2+ax+b} = +\infty \quad \frac{\sqrt[3]{2}}{(x-\sqrt[3]{2})^2(x^2+\sqrt[3]{2}x+\sqrt[3]{4})} = +\infty$$

صفر می‌شود

$\left[\frac{b}{a}\right] = 0$

$\frac{b}{a} = \frac{x^3\sqrt[3]{4}}{x^3\sqrt[3]{2}}$

(۳)

$$\lim_{x\to 1^+} \frac{[-x]+a}{\left|\frac{\sqrt{2}}{2}x+a\right|+a} = -\infty = \frac{a-1}{\left|\frac{\sqrt{2}}{2}x+a\right|+a} = -\infty$$

$\sqrt{2}$

$\frac{1}{2}$

$\frac{a-1}{\frac{1}{2}+2a} = -\infty$

$\frac{1}{2}+2a=0 \quad a=\frac{-1}{4}$

$\left[\frac{-1}{4}\right] = -1$

(۴)

$$\lim_{x\to -\frac{1}{4}^+} 12x - \left[\frac{-2}{4x}\right] = \frac{-2}{\frac{1}{4}} = -8$$

$4x+\left[\frac{2}{4x}\right]$

$\frac{1}{4}^-$

$\left[+\right]$

$\frac{12x+8}{4x+12}$

$\left[12^+\right]$

$\frac{8}{12} = \frac{4}{6} = \frac{2}{3}$

Hop $\Rightarrow \frac{12}{24} = \frac{4}{8} = \frac{2}{3}$

۵)
$$\lim_{x\to 2^+} \frac{x^2-\varepsilon}{x^3-[x^2]} = \frac{(x-2)(x+2)}{(x-2)(x^2+2x+\varepsilon)} = \frac{4}{12} = \frac{1}{3}$$
$[x^2]$ در 2^+ برابر ۴

۶)
$$\lim_{x\to -1} \frac{x^2+10x+17}{12+7\sqrt[3]{x}} = \frac{7\varepsilon-10+17}{12-12} \to \frac{0}{0}$$
هوپ ⇒ $\frac{2x+10}{\frac{7}{3\sqrt[3]{x^2}}}$ ، ε

۷)
$$\lim_{x\to 0} \frac{\sqrt{2+3x}-\sqrt{2-x}}{\sqrt{1-\cos x}} \times \frac{\sqrt{2+3x}+\sqrt{2-x}}{\sqrt{2+3x}+\sqrt{2-x}} = \frac{2+3x-2+x}{2\sqrt{2}\times\frac{-x}{\sqrt{2}}} = \frac{4x}{-4x} = -1$$
$\sqrt{1-\cos x} \to \sqrt{\frac{x^2}{2}} = \frac{-x}{\sqrt{2}}$ منفی چون $x\to 0^-$
عدد -2 عجیب

۸)
$$\lim_{x\to 0} \frac{k+\cos(\sqrt{a}x)}{kx^2} \to \text{مرتبه } 2 \quad \frac{k+1-\frac{ax^2}{2}}{kx^2} = 3 \Rightarrow \text{Hop}$$
مشتق میگیریم $\frac{-ax}{2kx} = 3 \quad \frac{a}{k} = -6$

۹)
$$\lim_{x\to 3a^+} \frac{2\sqrt{x-3a}+\sqrt[3]{x}-\sqrt[3]{4a}}{\sqrt{x^2-9a^2}}$$
$\sqrt[3]{4a} \to \sqrt[3]{3a}$
نوبا: $\sqrt{x}-\sqrt{3a}$ در $\sqrt{x}+\sqrt{3a}$
$\frac{x-3a}{\sqrt{x}+\sqrt{3a}}$
فاکتورگیری ⇒ $\sqrt{x-3a}\left(2+\frac{\sqrt[3]{x}-\sqrt[3]{3a}}{\sqrt{x}+\sqrt{3a}}\right)$
$\frac{(\sqrt{x-3a})(\sqrt{x+3a})}{(\sqrt{x-3a})(\sqrt{x+3a})}$
$x\to 3a^+$ هست اولیه ← چون
راهنمه ✓
$\frac{2}{\sqrt{3a+3a}} = \frac{2}{\sqrt{6a}}$

s.a.m

$$\lim_{x \to (-1)} \frac{1 - K[x]}{x^2 - 1} = -\infty$$

① -1^+ $\quad \frac{1+K}{0^-} = -\infty$

$1+K > 0 \quad K > -1$

② -1^- $\quad \frac{1+2K}{0^+} = -\infty$

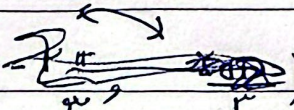
$1+2K < 0 \quad 2K < -1 \quad K < -\frac{1}{2}$

اشتراک ۲ و ۱ : $-1 < K < -\frac{1}{2}$

$-\frac{2\pi}{3}$ و $C.S \; -\frac{2\pi}{3}$

$-\frac{1}{2}$

مثلا $-\frac{2}{3}$ قرار دهیم



$(-\frac{2\pi}{3}, \frac{-1}{2})$ ناحیه سوم