کشف سلطان:

① $\lim\limits_{x \to ۲} \dfrac{۲x-۵}{x^۲+ax+b} = -\infty$

$a=-۴ \quad a+b=۰$

$\Rightarrow x^۲-۴x+۴ \Rightarrow b=۴$

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② $\lim \dfrac{x}{x^۲+ax+b} = +\infty \quad \left[\dfrac{b}{a}\right]$

$x \to (\sqrt[۳]{۴})$

$(x-\sqrt[۳]{۴})^۲ \Rightarrow x^۲ \underbrace{-۲\sqrt[۳]{۴}}_{a}\, x + \underbrace{\sqrt[۳]{۴}^{\,۲}}_{b}$

$\dfrac{b \Rightarrow}{a \Rightarrow} \dfrac{\sqrt[۳]{۱۶}}{-\sqrt[۳]{۳۲}} \Rightarrow \left[-\sqrt[۳]{\dfrac{۱}{۲}}\right] \Rightarrow -۱$

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③ $\lim\limits_{x \to \frac{۱}{\sqrt{۳}}^+} \dfrac{[-x]+a}{\left|\frac{\sqrt{۳}}{۳}x+a\right|+a} \quad \dfrac{-۱+a}{\left|\frac{۱}{۳}^+ +a\right|+a} = -\infty \Rightarrow$

$\left[\dfrac{-۱}{۹}\right] = -۱ \quad \dfrac{\sqrt{۳}}{۳}^+$

$\dfrac{۱}{۳}+۲a=۰ \Rightarrow a=\dfrac{-۱}{۶}$

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④ $\lim\limits_{x \to \frac{۱}{۲}^+} \dfrac{۱۶x-\left[\frac{۲}{x^۲}\right]}{۲۴x+\left[\frac{۳}{x^۲}\right]} \Rightarrow \dfrac{-۸}{-۱۲+\left[\frac{۳}{\frac{۱}{۴}}\right]} \simeq \dfrac{۰}{۰} \xRightarrow{\text{Hop}} \dfrac{۱۶}{۲۴} = \dfrac{۲}{۳}$

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⑤ $\lim\limits_{x \to ۲^+} \dfrac{x^۲-۴}{x^۳-[x^۳]} \simeq \dfrac{۰}{۰} \xRightarrow{\text{Hop}} \dfrac{۲x}{۳x^۲} \Rightarrow \dfrac{۴}{۱۲} = \dfrac{۱}{۳}$

تستانی

$$\Rightarrow ۲(-۶) = -۱۲$$

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۷) $\lim \dfrac{\sqrt{۲+۳x} - \sqrt{۲-x}}{\sqrt{1-\cos x}} = \dfrac{0}{0} \Rightarrow \dfrac{\times\sqrt{1+\cos}}{\times\sqrt{1+\cos}} \Rightarrow \dfrac{\left(\sqrt{۲+۳x} - \sqrt{۲-x}\right)\sqrt{۲}}{|\sin|}$

$\Longrightarrow \dfrac{\sqrt{۲+۳x}-\sqrt{۲-x}\ \sqrt{۲}}{-\sin}$ $\quad -\sin \simeq -x$

$|\sin| = 0^-$

تست امتحانی:

۴) $\dfrac{۲\sqrt{x-۳a} + ۳\sqrt{x} - \sqrt{۲۷a}}{\sqrt{x^۲-۹a^۲}}$

$\dfrac{۲}{\sqrt{x+۳a}} + \dfrac{۳\sqrt{x} - \sqrt{۲۷a}}{\sqrt{x^۲-۹a^۲}} \times \dfrac{\sqrt{x^۲+۹a^۲}}{\sqrt{x^۲+۹a^۲}}$

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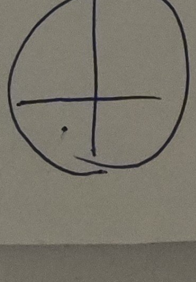
۱) $\lim \dfrac{1 - k[x]}{x^۲ - 1} = -\infty$

$x \longrightarrow -1^-$ $\quad \dfrac{1+۲k}{0^+} = -\infty \quad 1+۲k < 0 \Rightarrow k < \dfrac{-1}{۲}$

$x \longrightarrow -1^+$ $\quad \dfrac{1+k}{0^-} = -\infty \quad 1+k > 0 \Rightarrow k > -1$

$-1 < k < \dfrac{-1}{۲}$ $\quad (k\pi, \cos k\pi) \Rightarrow \ominus, \ominus$



$\dfrac{-\pi}{۲}$

ناحیه ۳

[illegible]

(6) $\lim_{x\to -8} \frac{x^2+10x+16}{12+6\sqrt[3]{x}} \;\frac{0}{0} \xrightarrow{Hop} \frac{2x+10}{\frac{6}{3\sqrt[3]{x^2}}} \Rightarrow 2(-6) = -12$

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(7) $\lim \frac{\sqrt{2+3x}-\sqrt{2-x}}{\sqrt{1-\cos x}} \;\frac{0}{0} \Rightarrow \frac{\times\sqrt{1+\cos}}{\times\sqrt{1+\cos}} \Rightarrow \frac{\left(\sqrt{2+3x}-\sqrt{2-x}\right)\sqrt{2}}{|\sin|}$

$\xrightarrow[|\sin|=0^-]{} \frac{\sqrt{2+3x}-\sqrt{2-x}\;\sqrt{2}}{-\sin} \xrightarrow{-\sin\simeq -x} \frac{\left(\sqrt{2+3x}-\sqrt{2-x}\right)\sqrt{2}}{-x}$

$\xrightarrow[Hop]{} \frac{\sqrt{2}\left(\frac{3}{2\sqrt{2+3x}}-\frac{-1}{2\sqrt{2-x}}\right)}{-1} \Rightarrow -\sqrt{2}\left(\frac{3}{2\sqrt{2}}+\frac{1}{2\sqrt{2}}\right)$

$\Rightarrow -\cancel{\sqrt{2}}\frac{2}{\cancel{\sqrt{2}}} \Rightarrow -2$

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(8) $\lim_{x\to 0} \frac{k+\cos(\sqrt{a}x)}{kx^4} = 3 \Rightarrow$ cos [illegible]

$\xrightarrow[\cos\simeq 1-\frac{x^2}{2}]{} \frac{k+\left(1-\frac{x^2\sqrt{a}}{2}\right)}{kx^2} = 3 \Rightarrow \frac{0}{0} \xrightarrow{Hop} \frac{-\cancel{x}\sqrt{a}}{2k\cancel{x}} = 3$

$\frac{-\sqrt{a}}{2k} = 3$ و $k+\sqrt{a} = 0$

-1