پرهام یراقی

۲) $x^2+ax+b \overset{x=1}{\Rightarrow} 1+a+b=0 \to a+b=-1$

$5-a+b=0 \Rightarrow a-b=5$ $\Big\} \Rightarrow a=2,\ b=-3$

$\Rightarrow 5x^2-2x-3=0$ $\qquad \left[\frac{-3-4}{5}\right]\left[-\frac{7}{5}\right]=-2$

$\lim_{x\to1} \frac{x^2+2x-3}{x-1} = \frac{2x+2}{1} = 4$

۳) $\lim_{x\to1^-} \tan\frac{(2x+1)\pi}{4} \to -1 \Rightarrow \lim_{x\to1^+} \frac{|x^2+x-2|}{a(1-x)}$

$= \frac{x^2+x-2}{a-ax} \Rightarrow \frac{2x+1}{-a} = \frac{3}{-a} = -1 \Rightarrow a=3$

$\lim_{x\to5} \frac{x^2+x-2}{3-3x} = \frac{28}{-12} = \frac{-7}{3}$ $\quad 10b \Rightarrow b=\frac{-7}{30} \Rightarrow$

$ab=3 \times \frac{-7}{30} = -\frac{7}{10}$

۴) $0^+ \to a+b[a+1]$

$0^- \to b[a+1]-b$ $\Big\} \Rightarrow a=-b$ $\qquad f(x)=a[x+1]+b[x]+b[x+1]$

$\Rightarrow \frac{a[x]}{f(x)} = \frac{a[x]}{a[x+1]+b[x]-a[x+1]} = \frac{a[x]}{-a[x]} = -1$

۵) $f(x)=-2a \Rightarrow \frac{a}{-2a} = -\frac{1}{2}$

۶) $x=a \Rightarrow a^2+ma+n=0$

$f(2a)=0 \Rightarrow 4a^2+2max+n=0$ $\Big\} \Rightarrow m=-3a$ $\qquad \lim_{x\to a} \frac{x^2+mx+n}{a-x}=2$

$\frac{2x+m}{-1} = \frac{-a}{-1} = a=2 \Rightarrow m=-6 \Rightarrow 4+12+n=0 \Rightarrow n=8$

$8+6=14 = n-m$

$$0^+ \qquad 0^-$$

$$-3a^2+1 \qquad -1+a$$

$$a \begin{cases} 1 \to \text{پیوسته با} \\ \frac{2}{a} \to f(x) \end{cases} \begin{cases} \frac{1}{3}[x]+\frac{1}{x}[\frac{x}{2}] \cdot \frac{1}{x}[x]+[-x] \\ b\sin(\frac{3\pi}{2}) \Rightarrow b=1 \end{cases}$$

برای پیوستگی

$$\Rightarrow \frac{a}{b} = \frac{2}{3}$$

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$$\lim_{x\to 1^+} \frac{x^2+mx-m-1}{mx^2-m+x-1} = \frac{2x+m}{2mx+1} \Rightarrow \frac{2+m}{2x+1} = \frac{m}{m+2}$$

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$$\Rightarrow m^2-3m-4=0 \Rightarrow m \begin{cases} -1 \\ 4 \end{cases} \quad \frac{0}{0} \text{ ندارد}$$

$$f(x) \begin{cases} \dfrac{|x^2+4x-5|}{4|x^2-1|+|x-1|} & x\neq 1 \\ \dfrac{4}{9} & x=1 \end{cases} \Rightarrow \lim_{x\to -\frac{1}{4}} = \frac{63}{73}$$

$$\xrightarrow{x=a} \frac{\sqrt{3}\,|x+1|}{|x+1|\,|x^2+x+1|} = \frac{\sqrt{3}\,|a+1|}{|a^2+a+m-2|}$$

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$$\xrightarrow{\frac{0}{0}} \begin{cases} a=-1 \\ m=2 \end{cases} \Rightarrow f(x)\ \frac{\sqrt{3}|-x-1|}{|x^3+1|} \Rightarrow \lim_{x\to -1} \frac{-\sqrt{3}\,|x+1|}{|x+1|\,|x^2+x+1|}$$

$$= \frac{-\sqrt{3}}{x^2+x+1} \Rightarrow -\sqrt{3}$$

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$$\frac{x^2+x}{x^2+ax} \Rightarrow \frac{2x+1}{2x+a} \cdot \frac{1}{a} = \frac{2a-1}{2a+2} \rightarrow 2a^2-3a-2=0 \Rightarrow x \begin{cases} -\frac{1}{2} \\ 2 \end{cases}$$

$$f(x) \begin{cases} \dfrac{x^2+|x|}{x^2-\frac{1}{2}|x|} \\ 2 \end{cases} \qquad \lim f(x)\ \frac{6}{3}$$

$$f(x) \begin{cases} \dfrac{x^2+|x|}{x^2+2|x|} \\ \dfrac{1}{2} \end{cases} \qquad \lim f(x) = \frac{3}{5}$$