D S

A یازدهم ریاضی — تکلیف شماره ۲۱ — ایلیا ... — ۲۰

۱- $4x^2+(m+4)x+\frac{m}{4} \Rightarrow m^2+16+8m-24m=0 \Rightarrow m=4$

$4a^2+4a+1=0 \Rightarrow a=-\frac{1}{2}$ $\lim\limits_{x\to -\frac{1}{2}} \frac{\sqrt{4}\,|a+\frac{1}{2}|}{|4x^2+\frac{1}{4}|} = 2\sqrt{3}\tan b$

$\Rightarrow \tan b = \frac{\sqrt{3}}{3} \Rightarrow b=\frac{\pi}{6}$ ✓ (۲)

۲- $x=1 \Rightarrow$ ریشه مخرج $f(x)=\frac{x^2+ax+b}{x-1} \Rightarrow a+b=-1$ (۱)

$5x^2-ax+b=0 \Rightarrow x=1 \Rightarrow a-b=5$ (۲) ; (۱),(۲) $a=2,\ b=-3$

$\Rightarrow \left[\frac{-3-4}{3}\right]=-3$ ✓ (۲)

۳- $x=1,\ x=5 \Rightarrow$ مجانب $\Rightarrow x=1 \Rightarrow \tan\frac{3\pi}{4}=\lim\limits_{x\to 1^+}\frac{|x^2+x-2|}{a(1-x)}$

$=\lim\limits_{x\to 1^+}\frac{(x+2)(x-1)}{a(1-x)} \Rightarrow \frac{3}{-a}=-1 \Rightarrow a=3$ (۲)

$x=5 \Rightarrow \lim \frac{|x^2+x-2|}{a(1-x)}=bh \Rightarrow b=\frac{28}{-12} \Rightarrow b=\frac{-7}{30}$

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

۴- $f(x)=a[x+1]+b[x+[a+1]]=a[x]+a+b[x]+b+b[a]$

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

$=\frac{a\cdot[a]}{b[a]}=\frac{a}{b}=-1$ ✓ (۴)

D S

۵- ... $f(x)=-2a \quad f(b)=-2a$

$\Rightarrow \frac{a}{f(b)}=\frac{a}{-2a}=-\frac{1}{2}$ ✓ (۲)

۶- $\lim_{x\to a} f(x)=f(a)=2 \Rightarrow \lim_{x\to a}\frac{x^2+mx+n}{a-x}=\lim\frac{(x-a)(x-2a)}{-(x-a)}=a$

$\Rightarrow a=2$ $\quad (x-2)(x-4)=x^2-6x+8=x^2+mx+n \Rightarrow m=-6$, $n=8$

$\Rightarrow n-m=8+6=14$ ✓ (۲)

۷، ۸ ...

(۷) $x=1^+ \Rightarrow \frac{|x^2+mx-m-1|}{m|(x-1)|\,|(x+1)|+|x-1|}=\frac{|(x-1)(x+m+1)|}{m|(x-1)|\,|(x+1)|+|x-1|}=\frac{2+m}{2m+1}$

$=\frac{m}{m+2} \Rightarrow m^2+4+4m=2m^2+m \Rightarrow m^2-3m-4=0$, $m=-1$ غ‌ق‌ق، $m=4$ ✓

$\lim\frac{|x^2+4x-5|}{4|x^2-1|+|x-1|}=\frac{\frac{42}{16}}{\frac{18}{4}}=\frac{7}{8}$ ✓ (۲)

(۸)- ۸، ۷ ... : ۷

if $x\to 0$: $0^- \to a-1$; $0 \to b\sin\left(\frac{\pi}{a}\right) \Rightarrow a-1=1-3a^2 \Rightarrow a=-1$ غ‌ق‌ق; $0^+ \to 1-3a^2$

$\Rightarrow a=\frac{2}{3}$ (۲)

$\Rightarrow a=\frac{2}{3} \Rightarrow b\sin\left(\frac{3\pi}{2}\right) \Rightarrow b=-\frac{1}{3} \Rightarrow \frac{a}{b}=\frac{\frac{2}{3}}{-\frac{1}{3}}=-2$ ✓

۹- $(\frac{\pi}{2}) \quad -1+2-m+1=0 \Rightarrow m=2$

$a^2+a=0$: $a=-1$; $a=0 \to 1$ غ‌ق‌ق

$\lim_{x\to -1} f(x)\quad \frac{\sqrt{3}\,|-x-5|}{|x^3+1|}=\frac{\sqrt{3}\,|x+1|}{|x+1|\,|x^2-x+1|}=\frac{\sqrt{3}}{3}=\frac{1}{\sqrt{3}}$ ✓ (۲)

D S

$$\lim_{x\to 0} f(x) = \frac{\ln(|x|+1)}{\ln(|x|+a)} = \frac{2a-1}{2a+2} \to \frac{1}{a} = \frac{2a-1}{2a+2} \Rightarrow \quad -b$$

$$2a+2 = 2a^2 - a \Rightarrow 2a^2 - 3a - 2 = 0 \Rightarrow \underline{a=2} \quad a = -\frac{1}{2} \text{ مرفوض}$$

$$\Rightarrow \lim_{x\to -\frac{1}{2}} f(x) = \frac{\ln(|x|+1)}{\ln(|x|+2)} = \frac{\frac{5}{2}}{\frac{5}{2}} = \frac{5}{5}$$

(٢)