۱۸,۷۵

نام و نام خانوادگی ....عرفان عبداللهی.... پاسخنامه تشریحی تکلیف شماره ...۲۱... کلاس ...دوازدهم تجربی A...

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$$f(x)\begin{cases} \dfrac{\sqrt{4x^2+(m+3)x+\frac{m}{2}}}{|2x^3+(m-3)x^2+a^2|} & x\neq a \\ \dfrac{2\tan b}{\sqrt{-x}} & x=a \end{cases}$$

(یاسین لطفی)

$\Delta \leq 0 \quad (m-1)^2 - 4\times 2(m-4) \leq 0$

$(m-7)^2 \leq 0 \longrightarrow m=7$

$|a^3+a^2| = 0 \longrightarrow a^2(a+1)=0 \begin{cases} a=0 \text{ ق ق غ} \\ a=-1 \text{ ق ق} \end{cases}$

$$f(x)\begin{cases} \dfrac{\sqrt{3(x+1)^2}}{|x^3+a^2|} = \dfrac{\sqrt{3}\,|x+1|}{|x^3+a^2|} & x\neq a \\ \dfrac{2\tan b}{\sqrt{-x}} & x=a \end{cases}$$

$$\lim_{x\to -1} \frac{\sqrt{3}\,\cancel{|x+1|}}{|x+1|\times|x^2-x+1|} = \frac{\sqrt{3}}{3}$$

$\dfrac{2\sin b}{3} = \dfrac{\sqrt{3}}{3} \longrightarrow \sin b = \dfrac{\sqrt{3}}{2} \to b = \dfrac{\pi}{3}$

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$5x^2 - ax + b = 0 \to x=1$

$x^2+ax+b=0 \to x=1$

$5-a+b=0$, $1+a+b=0 \longrightarrow 4-2a=0$, $a=2$, $b=-3$

$$\lim_{x\to 1} \frac{x^2+ax+b}{x-1} \to \frac{0}{0} \text{ HoP} = \frac{2x+a}{1}$$

در نقطه $x=1$ حد دارد ولی پیوسته نیست

$\left[\dfrac{-3-4}{3}\right] = -3$

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$f(1) = \tan\dfrac{3\pi}{4} = -1$

$$\lim_{x\to 1^+} \frac{|x^2+x-2|}{a(1-x)} = \frac{x^2+x-2}{a(1-x)} \xrightarrow{\frac{0}{0}} \text{HoP}$$

$\dfrac{2x+1}{-a} = 1 \longrightarrow a=-3$

$f(5) = b(5-[-5]) = 10b$

$10b = \dfrac{7}{3} \longrightarrow b = \dfrac{7}{30}$

$$\lim_{x\to 5^-} \frac{|x^2+x-2|}{a(1-x)} = \frac{28}{-4\times -3} = \frac{7}{3}$$

$ab = -\dfrac{7}{10}$

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

$(a+b)[x] + a+b+b[a]$

$a+b=0$

$f(x) = b[a]$

$\dfrac{a[a]}{f(a)} = \dfrac{a[a]}{-a[a]} = -1$

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$f(x) = b[x^2-ax]-2a \longrightarrow b=0 \quad f(x) = -2a$

$\dfrac{a}{f(b)} = \dfrac{a}{-2a} = -\dfrac{1}{2}$

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$\lim\limits_{x\to a} \dfrac{x^2+mx+n}{a-x} \xrightarrow{\frac{0}{0}\ \text{Hop}} \dfrac{2x+m}{-1}=2$ $2a+m=-2$ $\quad f(a)=f(2a)\longrightarrow a=0$ $a^2+am+n=0$ $\quad a=2 \quad m=-6 \quad n=1$ $4a^2+2am+n=0 \longrightarrow 3a^2+am=0$ $\quad n-m=14$ $a(3a+m)=0$	۲	۶
$x=k\in\mathbb{Z} \longrightarrow \lim\limits_{x\to k^+} f(x) = (1-a)(k)+(3a^2-1)(-k-1)$ $\quad \dfrac{a}{b}=\dfrac{\frac{2}{3}}{\frac{1}{3}}=2$ $\lim\limits_{x\to k^-} f(x) = (1-a)(k-1)+(3a^2-1)(-k)$ $\lim\limits_{x\to k^-} f(x) = \lim\limits_{x\to k^+} f(x) \longrightarrow 3a^2+a-2=0 \longrightarrow a\begin{cases}-1 \longrightarrow \lim\limits_{x\to k^+} = -2 \\ \frac{2}{3}\end{cases}$ غ ق ق $f(k)=b\sin(-\pi)=0$ $a=\frac{2}{3} \longrightarrow \lim\limits_{x\to k^+} f(x) = -\frac{1}{3}$ $\quad f(k)=b\sin\left(\frac{3\pi}{2}\right)\to -b=-\frac{1}{3}$ $\quad b=\frac{1}{3}$	۲	۷
$\lim\limits_{x\to 1} \dfrac{\|x^2+mx-m-1\|}{m(x^2-1)+\|x-1\|} = \dfrac{\|x-1\|\ \|x+m+1\|}{\|x-1\|(m\|x+1\|+1)} = \dfrac{\|m+2\|}{2m+1}$ $\dfrac{\|m+2\|}{2m+1}=\dfrac{m}{m+2} \longrightarrow m\neq -2 \longrightarrow \|m+2\|(m+2)=m(2m+1)$ $(m+2)^2=m(2m+1)\longrightarrow m=-1,4$ $\quad \lim\limits_{x\to\frac{1}{4}} = \frac{7}{8}$ $\lim\limits_{x\to -1} = \infty$ غ ق ق	۲	۸
$f(x)=\dfrac{\sqrt{3}\ \|ax+a\|}{\|x^3+(m-2)x+a^2\|} \longrightarrow a^3+(m-2)a+a^2=0$ $a(a^2+a+(m-2))=0$ $\lim\limits_{x\to -1} \dfrac{\sqrt{3}\ \|-(x+1)\|}{\|x^3+1\|} = \dfrac{\sqrt{3}\ \|x+1\|}{\|x+1\|\ \|x^2-x+1\|}$ $\quad a(a+1)=0$ $a=-1$ $\quad m=2$ $=\dfrac{\sqrt{3}}{3}$	۲	۹
$\lim\limits_{x\to 0^+} \dfrac{x^2+x}{x^2+ax} = \dfrac{2x+1}{2x+a} = \dfrac{1}{a}$ $\quad \dfrac{2a-1}{2a+2}=\dfrac{1}{a}$ $2a^2-a=2a+2$ $\lim\limits_{x\to 0^-} \dfrac{x^2-x}{x^2-ax} = \dfrac{2x-1}{2x-a} = \dfrac{1}{a}$ $\quad 2a^2-3a-2=0$ غ ق ق -1 $\quad +4$ ق ق $\lim\limits_{x\to\frac{1}{4}} \dfrac{\frac{1}{16}+\frac{1}{4}}{\frac{1}{16}+\frac{1}{16}} = \dfrac{5}{16}\times\dfrac{8}{1}=\dfrac{5}{2}$	۱,۷۵	۱۰

$a=2 \longrightarrow \lim\limits_{x\to\frac{1}{2}} f(x) = \lim\limits_{x\to\frac{1}{2}} \dfrac{x^2+x}{x^2+2x} = \dfrac{\frac{1}{4}+\frac{1}{2}}{\frac{1}{4}+1} = \dfrac{\frac{3}{4}}{\frac{5}{4}} = \dfrac{3}{5}$

سوال ۱۱

$$\Delta = 0 \rightarrow (m+3)^2 - 4\left(\frac{m}{2}\right)\times 6 = 0 \rightarrow m^2+6m+9-12=0 \rightarrow m^2-6m+9=0 \rightarrow m=3$$

$$\lim_{x\to a} \frac{\sqrt{3x^2+3x+\frac{3}{4}}}{|2x^3+a^2|} = \frac{\sqrt{3\left(x^2+x+\frac{1}{4}\right)}}{|2x^3+a^2|} = \frac{\sqrt{3}\,\left|x+\frac{1}{2}\right|}{|2x^3+a^2|}$$

$$2a^3+a^2=0 \rightarrow a^2(2a+1)=0 \rightarrow \begin{cases} a=0 \rightarrow \frac{x}{0} \quad \times \\ a=-\frac{1}{2} \rightarrow \frac{\sqrt{3}\left|x+\frac{1}{2}\right|}{\left|2x^3+\frac{1}{4}\right|} = \frac{0}{0} \quad \checkmark \end{cases}$$

$$\lim_{x\to -\frac{1}{2}} \frac{\sqrt{3}\left|x+\frac{1}{2}\right|}{2\left|x^3+\frac{1}{8}\right|} = \frac{\sqrt{3}\left|x+\frac{1}{2}\right|}{2\left|x+\frac{1}{2}\right|\left|x^2-\frac{1}{2}x+\frac{1}{4}\right|} = \frac{2\sqrt{3}}{3}$$

$$\frac{2\tan b}{\sqrt{-\left(-\frac{1}{2}\right)}} = \frac{2\sqrt{3}}{3} \rightarrow \tan b = \frac{\sqrt{3}}{3} \rightarrow b = \frac{\pi}{6}$$