نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ۲۱ کلاس ...

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$$\begin{cases} 4a^2+(m+2)a+\frac{m}{2}=0 \\ 2a^3+(m-3)a^2+a^2=2a^3+(m-2)a^2=0 \longrightarrow m-2=-2a \longrightarrow m=-2a+2=3 \\ 4a^2+(-2a+5)a-a+1=4a^2+4a+1=0 \longrightarrow a=-\frac{1}{2} \end{cases}$$

$$\frac{\sqrt{4x^2+4x+\frac{3}{2}}}{4x^3+\frac{1}{4}}=\frac{\sqrt{(x+\frac{1}{2})(4x+3)}}{2\times(x^3+\frac{1}{8})}=\frac{\sqrt{4}\times(x+\frac{1}{2})}{2\times(x+\frac{1}{2})(x^2+\frac{1}{4}-\frac{1}{2}x)}=\frac{\sqrt{4}}{2\times(x^2-\frac{1}{2}x+\frac{1}{4})}$$

$$x=-\frac{1}{2} \longrightarrow \frac{\sqrt{4}}{2\times\frac{3}{4}}=\frac{2\sqrt{4}}{3} \qquad \frac{2\tan b}{\sqrt{\frac{1}{2}}}=\frac{4\tan b}{\sqrt{2}}=\frac{2\sqrt{4}}{3} \longrightarrow \tan b=\frac{\sqrt{3}}{3} \longrightarrow \boxed{b=\frac{\pi}{6}}$$

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$$\lim_{x\to 1}\frac{x^2+ax+b}{x-1}=\frac{0}{0}\overset{\text{hop}}{\longrightarrow}\frac{2x+a}{1}=2+a=5-a+b \longrightarrow -3=b-2a$$

$$\left[\frac{b-2a}{3}\right]=\left[\frac{-3}{3}\right]=\boxed{-1}$$

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$$f(x)\begin{cases} x\le 1 & \tan\frac{(2x+1)\pi}{4} \\ 1<x<5 & \frac{-(x+2)(x-1)}{a(1-x)} \\ 5\le x & b(x-[-x]) \end{cases}$$

$$x=1\begin{cases} 1^+ & \tan\frac{3\pi}{4}=-1 \\ 1 & \frac{3}{a} \\ 1^- & \frac{3}{a} \end{cases} \qquad -1=\frac{3}{a}\longrightarrow a=-3$$

$$ab=(-3)(-\frac{7}{33})=\boxed{\frac{7}{11}}$$

$$x=5\begin{cases} 5^+ & b(5-[(-5)^-])=11b \\ 5 & 11b \\ 5^- & \frac{7}{a}=-\frac{7}{3} \end{cases} \qquad 11b=\frac{-7}{3} \qquad b=\frac{-7}{33}$$

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$$x=0\begin{cases} 0^+ & a+b[a+1] \\ 0 & a+b[a+1] \\ 0^- & -b+b[a+1] \end{cases} \qquad a+b[a+1]=-b+b[a+1]\longrightarrow a=-b$$

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

$$f(b)=-a[a]$$

$$\frac{a[a]}{-a[a]}=\boxed{-1}$$

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$$\lim_{x\to a}\frac{x^2+mx+n}{a-x}=\frac{0}{0}\overset{\text{hop}}{\longrightarrow}\frac{2x+m}{-1}=-2x-m=-2a-m=2\longrightarrow m=-2a-2$$

$$f(2a)=\frac{4a^2+(-2a-2)(2a)+n}{a-2a}=\frac{-4a+n}{-a}=0\longrightarrow n=4a$$

$$x^2+mx+n=a^2+(-2a-2)a+4a=-a^2+2a=0\longrightarrow\begin{cases}a=0\\a=2\end{cases}$$

$$a=0\longrightarrow m=-2,\ n=0 \qquad n-m=2$$

$$a=2\longrightarrow m=-6,\ n=8 \qquad n-m=14$$

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

$x=a \begin{cases} a^+=a-\beta \to b[(a+\beta)(+\beta)]-2a=-2a \\ a \to -2a \\ a^-=a+\beta \to b[(a-\beta)(+\beta)]-2a=-b-2a \end{cases}$ $\quad a^-$ $\quad 0^-$

$-b-2a=-2a \to b=0 \to f(x)=-2a$

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

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$x=0 \begin{cases} 0^+ \to -2a^2+1 \\ 0 \to b\sin(\frac{\pi}{a}) \\ 0^- \to a-1 \end{cases}$ $\quad -2a^2+1=a-1 \to \begin{cases} a=-1 \\ a=\frac{2}{3} \end{cases}$

$a=-1 \to -2=b\sin(-\pi)=0$ ☹

$a=\frac{2}{3} \to -\frac{1}{2}=b\sin(\frac{2\pi}{3})=\frac{\sqrt{3}}{2}b \to b=\frac{2}{2\sqrt{3}}$

$\frac{a}{b}=\frac{\frac{2}{3}}{\frac{2}{2\sqrt{3}}}=\boxed{\sqrt{3}}$

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$x=1 \begin{cases} 1^+ \to \frac{x^2+mx-m-1}{mx^2-m+x-1} \xrightarrow{\text{hop}} \frac{2x+m}{2mx+x}=\frac{2+m}{2m+1} \\ 1 \to \frac{m}{m+2} \\ 1^- \to \frac{-x^2-mx+m+1}{-mx^2+m-x+1} \xrightarrow{\text{hop}} \frac{-2x-m}{-2mx-1}=\frac{2x+m}{2mx+1}=\frac{2+m}{2m+1} \end{cases}$

$\frac{m+2}{2m+1}=\frac{m}{m+2} \to m^2+4m+4=2m^2+m \to m^2-3m-4=0 \to \begin{cases} m=4 \\ m=-1 \end{cases}$

$m=4 \to \frac{|x^2+4x-5|}{4|x^2-1|+|x-1|}=\frac{|\frac{1}{16}+1-5|}{4|\frac{1}{16}-1|+|\frac{1}{4}-1|}=\frac{\frac{64}{16}}{\frac{48}{8}}=\boxed{\frac{7}{8}}$

$m=-1 \to \frac{|x^2-x|}{-|x^2-1|+|x-1|}=\frac{|1|+|1|}{0+2}=\boxed{1}$

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$x^3+(m-2)x+a^2 \xrightarrow{x=a} a^3+(m-2)a+a^2=0 \to m-2=-a^2-a \to m=-a^2-a+2$

$\sqrt{3}|ax+a| \xrightarrow{x=a} \sqrt{3}|a^2+a|=0 \to a^2+a=0 \to \begin{cases} a=0 \text{ ☹} \\ a=-1 \end{cases}$

$a=-1 \to m=2 \to \frac{\sqrt{3}|-x-1|}{|x^2+1|} \xrightarrow{\text{hop}} \frac{-\sqrt{3}}{3x^2}=\boxed{-\frac{\sqrt{3}}{3}}$

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$f(x) \begin{cases} x>0 \quad \frac{x^2+x}{x^2+ax} \xrightarrow{\text{hop}} \frac{2x+1}{2x+a} \xrightarrow{x=0} \frac{1}{a} \\ x=0 \quad \frac{2a-1}{2a+2} \\ x<0 \quad \frac{x^2-x}{x^2-ax} \xrightarrow{\text{hop}} \frac{2x-1}{2x-a} \xrightarrow{x=0} \frac{1}{a} \end{cases}$

$\frac{2a-1}{2a+2}=\frac{1}{a} \to 2a^2-a=2a+2 \to 2a^2-3a-2=0 \to \begin{cases} a=2 \\ a=-\frac{1}{2} \end{cases}$

$a=2 \to \frac{x^2+|x|}{x^2+2|x|} \xrightarrow{x=\frac{1}{2}} \frac{\frac{1}{4}+\frac{1}{2}}{\frac{1}{4}+1}=\frac{\frac{3}{4}}{\frac{5}{4}}=\frac{3}{5}$

$a=-\frac{1}{2} \to \frac{x^2+|x|}{x^2-\frac{1}{2}|x|} \xrightarrow{x=-2} \frac{4+2}{4-1}=\frac{6}{3}=2$

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