نام و نام خانوادگی .... پاسخنامه تشریحی تکلیف شماره ..۵.. کلاس ....

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$$\lim_{x\to 2} \frac{2x-5}{x^2+ax+b} = -\infty \Rightarrow \begin{cases} x\to 2^+ \quad \lim \dfrac{-1}{x^2+ax+b} = -\infty \\ x\to 2^- \quad \lim \dfrac{-1}{x^2+ax+b} = -\infty \end{cases} \Rightarrow x^2+ax+b = 0^+ \quad x\to 2$$

$$\Rightarrow \lim \frac{-1}{x^2+ax+b} = -\infty$$

$$4+2a+b>0 \to 2a+b>-4$$

$$\to x^2+ax+b = (x-2)^2 = x^2-4x+4$$

$$a+b = -4+4 = 0$$

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$$\lim_{x\to \sqrt[3]{4}} \frac{x}{x^2+ax+b} = +\infty \quad \begin{cases} (\sqrt[3]{4})^+ \Rightarrow \dfrac{\sqrt[3]{4}}{x^2+ax+b} = +\infty \\ (\sqrt[3]{4})^- \quad \dfrac{\sqrt[3]{4}}{x^2+ax+b} = +\infty \end{cases} \quad \left[\frac{1}{-\sqrt[3]{2}}\right] = -1$$

$$\to x^2+ax+b = (x-\sqrt[3]{4})^2 \to x^2 - 2\sqrt[3]{4} + 2\sqrt[3]{2} \to \left[\frac{b}{a}\right] = \left[\frac{2\sqrt[3]{2}}{-2\sqrt[3]{4}}\right]$$

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$$\lim_{x\to (\frac{\sqrt{3}}{3})^+} \frac{[-x]+a}{\left|\frac{\sqrt{3}}{3}x+a\right|+a} = -\infty \Rightarrow \frac{-1+a}{\left|\frac{1}{3}^+ + a\right| + a} = -\infty$$

$$\left|\frac{1}{3}+a\right| + a = 0 \quad \begin{cases} 2a+\frac{1}{3} = 0 \to a = -\frac{1}{6} \\ -\frac{1}{3} \to a < -\frac{1}{3} \end{cases}$$

$$[a] = -1$$

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$$\lim_{x\to (-\frac{1}{4})^+} \frac{16x - [-\frac{2}{x^2}]}{24x + [\frac{3}{x^2}]} \Rightarrow \frac{16x+9}{24x+12} = \frac{1}{0^+} = +\infty$$

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$$\lim_{x\to 2^+} \frac{x^2-4}{x^3-[x^3]} \Rightarrow \frac{x^2-4}{x^3-8} = \frac{(x-2)(x+2)}{(x-2)(x^2+2x+4)} = \frac{x+2}{x^2+2x+4} = \frac{4}{12}$$

$$= \frac{1}{3}$$

$$\lim_{x\to -8} \frac{x^2+10x+16}{12+6\sqrt[3]{x}} \Rightarrow \frac{(x+8)(x+2)}{6(2+\sqrt[3]{x})} \Rightarrow \frac{(\sqrt[3]{x}+2)\left(4-2\sqrt[3]{x}+\sqrt[3]{x}^{\,2}\right)(x+2)}{6(2+\sqrt[3]{x})}$$

$$= \frac{-\cancel{6}\left(4+2\sqrt[3]{x}+\sqrt[3]{x}^{\,2}\right)}{\cancel{6}} = -(4+4+4) = -12$$ 6

$$\lim_{x\to 0^-} \frac{\sqrt{2+3x}-\sqrt{2-x}}{\sqrt{1-\cos x}} = \frac{2+3x-2+x}{2\sqrt{2}\sqrt{1-\cos x}} = \frac{\cancel{4}x}{\cancel{4}\sqrt{2}\sqrt{1-\cos x}} = \frac{x}{\sqrt{1-\left(1-\frac{x^2}{2}\right)}} = \frac{x}{\sqrt{\frac{x^2}{2}}}$$ 7

$$\Rightarrow \frac{\cancel{x}}{-\frac{\cancel{x}}{\sqrt{2}}\times\sqrt{2}} = -2$$

$$\lim_{x\to 0} \frac{k+\cos(\sqrt{a}\,x)}{kx^2} = 3 \Rightarrow \frac{k+1-\frac{ax^2}{2}}{kx^2} = \frac{-\frac{ax^2}{2}+(k+1)}{kx^2} = 3$$

$$\Rightarrow k=-1 \rightarrow \frac{-\frac{ax^2}{2}}{-x^2} \Rightarrow 3 \Rightarrow \frac{a}{2} = 3 \Rightarrow a=6 \Rightarrow \frac{a}{k} = \frac{6}{-1} = -6$$ 8

$$\lim_{x\to (3a)^+} \frac{2\sqrt{x-3a}+3\sqrt{x}-\sqrt{27a}}{\sqrt{x^2-9a^2}} \Rightarrow \frac{2\sqrt{x-3a}}{\sqrt{(x-3a)(x+3a)}} + \frac{3\left(\sqrt{x}-\cancel{\sqrt{3a}}\right)}{\cancel{\sqrt{x^2-9a^2}}} \; 0$$ 9

$$\frac{2}{\sqrt{(x+3a)}} = \frac{2}{\sqrt{6a}} = \sqrt{\frac{2}{3}a}$$

$$\lim_{x\to -1} \frac{1-k[x]}{x^2-1} = -\infty \quad \begin{cases} x=-1^+ \Rightarrow \dfrac{1+k}{\underset{0^-}{x^2-1}} = -\infty & 1+k>0 \\ & 1+2k<0 \\ x=-1^- \Rightarrow \dfrac{1+2k}{\underset{0^+}{x^2-1}} = -\infty & \end{cases}$$ 10

$(k\in$,

$\Rightarrow k>-1$

$k<-\frac{1}{2}$