نام و نام خانوادگی ...... [illegible] ...... پاسخنامه تشریحی تکلیف شماره .... کلاس ......

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$$\lim_{x\to 2} \frac{2x-5}{x^2+ax+b} = \infty$$

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

$$a=4 \quad b=4$$

$$a+b=8$$

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$$\lim_{x\to(\sqrt[3]{4})} \frac{x}{x^2+ax+b} = +\infty$$

صورت ... ریشه مضاعف ... باشد

$$x^2+ax+b = (x-\sqrt[3]{4})^2$$

$$x^2+\sqrt[3]{16}+2\sqrt[3]{4}x$$

$$b=\sqrt[3]{16} \quad a=2\sqrt[3]{4}$$

$$\left[\frac{\sqrt[3]{16}}{2\sqrt[3]{4}}\right] = \left[\frac{\sqrt[3]{4}}{2}\right] = 0$$

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$$\lim_{x\to(\frac{1}{\sqrt3})^+} \frac{[-x]+a}{\left|\frac{\sqrt3}{3}x+a\right|+a} \to \frac{a-1}{\left|\frac{\sqrt3}{3}x+a\right|+a} = -\infty \xrightarrow{x=\frac{1}{\sqrt3}^+} \frac{a-1}{\left|\frac13+a\right|+a} = -\infty$$

$$a+\frac13^+>0 \to a+\frac13^++a \quad \frac{a-1}{2a+\frac13^+} = -\infty \to \quad a=-\frac16 \to \left[-\frac16\right] = -1$$

$$a+\frac13^+<0 \to \frac{a-1}{-\frac13^-} \to a=+\infty \to$$ غ ق

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$$\lim_{x\to(-\frac12)^+} \frac{16x-\left[\frac{2}{x^2}\right]}{24x+\left[\frac{3}{x^2}\right]} = \frac{16x+9}{24x+12} \to \frac{1}{0^+} = +\infty$$

حد ندارد.

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$$\lim_{x\to 2^+} \frac{x^2-4}{x^3-[x^3]} \to \frac{x^2-4}{x^3-8} \to \frac{(x-2)(x+2)}{(x-2)(x^2+4+2x)} = \frac{x+2}{x^2+4+2x} = \frac{4}{12} = \frac13$$

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

$$\lim_{x\to -8} \frac{(x+2)(4+\sqrt[3]{x^2}-2\sqrt[3]{x})}{6} = \frac{-6\times 12}{\cancel{6}} = -12$$ ۶

$$\lim_{x\to 0^-} \frac{\sqrt{2+3x}-\sqrt{2-x}}{\sqrt{1-\cos x}} = \frac{(\sqrt{2+3x}-\sqrt{2-x})(\sqrt{2+3x}+\sqrt{2-x})}{\sqrt{\cancel{1-1}+\frac{x^2}{2}}\,(\sqrt{2+3x}+\sqrt{2-x})}$$ ۷

$$\cos x \xrightarrow{x\to 0} 1-\frac{x^2}{2} \qquad x\sqrt{\tfrac{1}{2}}$$

$$\xrightarrow{x\to 0} \frac{2+3x-2+x}{x\sqrt{\frac{1}{2}}\,(\sqrt{2+3x}+\sqrt{2-x})} = \frac{4x}{x\sqrt{\frac{1}{2}}} = \frac{4}{\sqrt{\frac{1}{2}}\times 2\sqrt{2}} = \frac{4}{\frac{\sqrt{2}}{\sqrt{4}}\times 2\sqrt{2}} = \frac{4}{2} = 2$$

$$\lim_{x\to 0} \frac{k+\cos(\sqrt{a}\,x)}{kx^2} = 3 \longrightarrow \frac{k+1-\frac{ax^2}{2}}{kx^2} = 3$$ ۸

$$\longrightarrow 3kx^2 = k+1-\frac{ax^2}{2} \longrightarrow k=-1 \quad a=-6k \longrightarrow a=-6$$

$$\frac{a}{k} = \frac{-6}{-1} = 6$$

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$$\lim_{x\to -1} \frac{1-k[x]}{x^2-1} = -\infty$$

$$x\to -1^+ \longrightarrow \frac{1+k}{x^2-1} = -\infty \to \frac{1+k}{0^-} = -\infty$$

$$\to 1+k>0 \to \boxed{k>-1}$$

$$x\to -1^- \longrightarrow \frac{1+2k}{0^+} = -\infty \to 1+2k<0$$ ۱۰

$k\pi \longrightarrow$ در ناحیه سوم

$$2k<-1$$

$$\boxed{-1<k<-\tfrac{1}{2}} \qquad \boxed{k<-\tfrac{1}{2}}$$

$\cos(k\pi)$