نام و نام خانوادگی ...تابان حبیبیان... پاسخنامه تشریحی تکلیف شماره .... کلاس ..دوازدهم B..........

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$$\lim_{x\to 2} \frac{2x-5}{x^2+ax+b} = -\infty \rightarrow \lim \frac{-1}{\underbrace{4+2a+b}_{0^+}} = -\infty$$

$$\rightsquigarrow x^2+ax+b = (x-2)^2 = x^2+\underbrace{4}_{b}\underbrace{-4x}_{a} \rightarrow \boxed{a+b=0}$$

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$$\lim_{x\to\sqrt[3]{4}} \frac{x}{x^2+ax+b} = +\infty \rightarrow \lim \frac{\sqrt[3]{4}}{\underbrace{\sqrt[3]{16}+a\sqrt[3]{4}+b}_{0^+}} = +\infty$$

$$x^2+ax+b = (x-\sqrt[3]{4})^2 = x^2\underbrace{-2\sqrt[3]{4}x}_{a}+\underbrace{\sqrt[3]{16}}_{\underbrace{2\sqrt[3]{2}}_{b}} \rightarrow \left[\frac{b}{a}\right] = \left[\frac{2\sqrt[3]{2}}{-2\sqrt[3]{4}}\right]$$

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

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$$\lim_{x\to\left(\frac{1}{\sqrt[3]{4}}\right)^+} \frac{[-x]+a}{\left|\frac{\sqrt[3]{4}}{4}x+a\right|+a} = -\infty \rightarrow \lim \frac{\overset{-1}{\cancel{\left[\frac{-1}{\sqrt[3]{4}}\right]}}+a}{\left|\frac{1}{4}+a\right|+a} = -\infty$$

$$\frac{1}{4}+a<0 \rightarrow \frac{a-1}{-\frac{1}{4}} = -\infty \quad \times \quad \Big\} \quad \frac{1}{4}+a>0 \rightarrow \frac{a-1}{\frac{1}{4}+2a} = -\infty$$

$$\frac{1}{4}+2a<0 \rightarrow a < -\frac{1}{8} \rightsquigarrow \boxed{[a] = -1}$$

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$$\lim_{x\to\left(-\frac{1}{2}\right)^+} \frac{16x-\left[-\frac{2}{x^2}\right]}{24x+\left[\frac{3}{x^2}\right]} \qquad x>-\frac{1}{2} \rightsquigarrow x^2<\frac{1}{4} \rightarrow \frac{2}{x^2}>8, \quad \frac{3}{x^2}>12$$

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

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$$\lim_{x\to 2^+} \frac{x^2-4}{x^3-[x^3]} , \quad \frac{x^2-4}{x^3-8} \quad \frac{0}{0} \xrightarrow{\text{Hop}} \frac{2x}{3x^2} = \frac{2}{3x}$$

$$\lim_{x\to 2} \frac{2}{3x} = \boxed{\frac{1}{3}}$$

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$$\lim_{x\to -8} \frac{x^2+10x+16}{12+6\sqrt[3]{x}} \xrightarrow[\text{Hop}]{\frac{0}{0}} \lim \frac{2x+10}{\frac{6}{3\sqrt[3]{x^2}}} = \frac{3\sqrt[3]{x^2}(2x+10)}{6}$$

$$= \sqrt[3]{x^2}(x+5) \to \lim_{x\to -8} \sqrt[3]{x^2}(x+5) = 4\times -3 = \boxed{-12}$$

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$$\lim_{x\to 0^-} \frac{\sqrt{2+3x}-\sqrt{2-x}}{\sqrt{1-\underbrace{\cos x}_{1-\frac{x^2}{2}}}} \xrightarrow{\frac{0}{0}} \times \frac{\sqrt{2+3x}+\sqrt{2-x}}{\sqrt{2+3x}+\sqrt{2-x}} = \frac{4x}{\frac{|x|}{\sqrt{2}}\left(\frac{\sqrt{2+3x}+\sqrt{2-x}}{2\sqrt{2}}\right)}$$

$$= \frac{4x}{2\underbrace{|x|}_{-x}} = \boxed{-2}$$

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$$\lim_{x\to 0} \frac{k+\cos(\sqrt{a}\,x)}{kx^2} = 3$$ مخرج صفر و جواب عدد پس $\frac{0}{0}$ بوده و صورت هم صفر $\quad k+\cos(0)=0 \to \boxed{k=-1}$

$$\lim_{x\to 0} \frac{-1+\overbrace{\cos(\sqrt{a}\,x)}^{1-\frac{ax^2}{2}}}{-x^2} = \frac{-\frac{a\cancel{x^2}}{2}}{-\cancel{x^2}} = \frac{a}{2} = 3 \to \boxed{a=6}$$

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

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$$\lim_{x\to 3a^+} \frac{2\sqrt{x-3a}+3\sqrt{x}-\sqrt{27a}}{\sqrt{x^2-9a^2}} \xrightarrow[\text{Hop}]{\frac{0}{0}} \frac{\frac{\cancel{2}}{\cancel{2}\sqrt{x-3a}}+\frac{3}{2\sqrt{x}}}{\frac{\cancel{2}x}{\cancel{2}\sqrt{x-3a}\sqrt{x+3a}}} = \frac{\frac{2\sqrt{x}+3\sqrt{x-3a}}{2\sqrt{x}\,\cancel{\sqrt{x-3a}}}}{\frac{x}{\cancel{\sqrt{x-3a}}\sqrt{x+3a}}}$$

$$\lim_{x\to 3a^+} \frac{\sqrt{x+3a}\left(2\sqrt{x}+\cancel{3\sqrt{x-3a}}\right)}{2\sqrt{x}\times x} = \frac{\sqrt{6a}\times \cancel{2\sqrt{3a}}}{\cancel{2\sqrt{3a}}\times 3a} = \frac{\sqrt{6a}}{3a} = \frac{2}{\sqrt{6a}}$$

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$$\lim_{x\to -1} \frac{1-k[x]}{x^2-1} = -\infty \quad \begin{cases} x\to -1^+ , & \frac{1+k}{0^-} = -\infty \\ x\to -1^- , & \frac{1+2k}{0^+} = -\infty \end{cases}$$

$1+k>0 \to k>-1$ $\quad -1<k<-\frac{1}{2}$ $\quad (\underbrace{kx}_{\text{منفی}}, \underbrace{\cos kx}_{\text{منفی}})$ ناحیه سوم

$1+2k<0 \to k<-\frac{1}{2}$