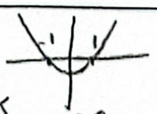
نام و نام خانوادگی ......[illegible]...... پاسخنامه تشریحی تکلیف شماره ...۲... کلاس ...[illegible]...

۱	$\lim\limits_{x\to 2} \frac{2x-5}{x^2+ax+b} = \frac{-1}{x^2+ax+b} = \frac{-1}{x^2-4x+4} = \frac{-1}{0^+} = -\infty$ $\lim\limits_{x\to 2} \underbrace{x^2+ax+b}_{0^+} = 0 \Rightarrow (x-2)^2 = x^2 \underset{a}{-4}x + \underset{b}{4} \Rightarrow a+b=0$ $0 \quad 2$
۲	$\lim \frac{\sqrt[3]{4}}{x^2+ax+b} = +\infty$ $\to x^2+ax+b \to 0^+ \Rightarrow (x-\sqrt[3]{4})^2 = x^2 \underset{a}{-2\sqrt[3]{4}}x + \underset{b}{2\sqrt[3]{2}}$ $\Rightarrow \frac{b}{a} = -\frac{2\sqrt[3]{4}}{2\sqrt[3]{4}} = \frac{1}{\sqrt[3]{2}} \Rightarrow \left[\frac{1}{\sqrt[3]{2}}\right] = \left[-0/\ldots\right] = -1$ $\sqrt[3]{2} = 1/\ldots$
۳	$\frac{1}{\sqrt{3}} = 0/\ldots \Rightarrow \left[-\frac{1}{\sqrt{3}}\right] = -1 \Rightarrow \lim\limits_{x\to\left(\frac{1}{\sqrt{3}}\right)^-} \frac{a-1}{\left\|\frac{\sqrt{3}}{2}x+a\right\|+a} = -\infty$ $\left\|\frac{1}{2}+a\right\|+a=0$ $\lim\limits_{x\to\left(\frac{1}{\sqrt{3}}\right)^+} \frac{-\frac{7}{4}}{\underbrace{\left\|\frac{\sqrt{3}}{2}x-\frac{1}{4}\right\|-\frac{1}{4}}_{0^+}} = -\infty$ $\Rightarrow -a = \frac{1}{2}+a$ or $a = \frac{1}{2}+a$ ✗ $\Rightarrow a = -\frac{1}{4}$ $\Rightarrow [a] = \left[-\frac{1}{4}\right] = -1$
۴	$-\frac{1}{2}^- \xrightarrow{\text{در}} x^2 \xrightarrow[\text{نزولی}]{} \frac{2}{x^2} \xrightarrow[\text{صعودی}]{} -\frac{2}{x^2} \xrightarrow[\text{نزولی}]{} \Rightarrow 14x - \left[-\frac{2}{x^2}\right] = 14x - [-8^-] = 14x+9$ $-\frac{1}{2}^- \xrightarrow[\text{نزولی}]{\text{در}} x^2 \xrightarrow[\text{صعودی}]{} \frac{3}{x^2} \Rightarrow 24x + \left[\frac{3}{x^2}\right] = 24x + [12^+] = 24x+12$ $\Rightarrow \frac{14x+9}{24x+12} = \frac{1}{0^+} = +\infty$
۵	$\lim\limits_{x\to 2^+} \frac{x^2-4}{x^3-[x^3]} = \frac{x^2-4}{x^3-8} = \frac{\cancel{(x-2)}(x+2)}{(x-2)(x^2+2x+4)} = \frac{4}{12} = \frac{1}{3}$

۶	$\lim_{x \to -8} \frac{x^2+10x+16}{12+6\sqrt[3]{x}} = \frac{(x+2)(x+8)}{6(2+\sqrt[3]{x})} = \frac{(x+8)\cancel{(\sqrt[3]{x}+2)}(\sqrt[3]{x^2}-2\sqrt[3]{x}+4)}{6\cancel{(\sqrt[3]{x}+2)}}$ $= \frac{(-6)(4+4+4)}{6} = -12$
۷	$\frac{\sqrt{2+3x}-\sqrt{2-x}}{\sqrt{1-\cos x}} = \frac{\sqrt{2+3x}-\sqrt{2-x}}{\lvert x \rvert \times \frac{\sqrt{2}}{2}} \times \frac{\text{مزدوج}}{\text{مزدوج}} = \frac{2+3x-2+x}{-x \times \frac{\sqrt{2}}{2} \times 2\sqrt{2}} = \frac{4x}{-2x} = -2$
۸	$\lim \frac{k+\cos(\sqrt{a}x)}{kx^2} \xrightarrow[\text{Hop}]{\frac{0}{0}} \frac{-\sqrt{a}\sin(\sqrt{a}x)}{2kx} = \frac{-ax}{2kx} = -\frac{a}{2k} = 3$ $\Rightarrow \frac{a}{k} = -6$
۹	
۱۰	 $-1^+ \to \frac{1+k}{\underbrace{(x-1)(x+1)}_{0^-}} = \frac{1+k}{0^-} = -\infty \Rightarrow 1+k>0 \quad k>-1$ $-1^- \to \frac{1+2k}{\underbrace{x^2-1}_{0^+}} = -\infty \Rightarrow 1+2k<0 \quad k<-\frac{1}{2}$ $-\pi < k\pi < -\frac{\pi}{2}$ طول منفی $-1 < \cos k\pi < 0$ عرض منفی