نام و نام خانوادگی ..[illegible].......... پاسخنامه تشریحی تکلیف شماره ..19.. کلاس ..[illegible] B..........

1

$$\lim_{x \to -2} 2\left[\frac{2-x}{2}\right] + a\left[\frac{x+2}{3}\right] \to \begin{cases} \xrightarrow{x \to -2^+} 2[2^-] + a[0^+] = 2 + 0 \\ \xrightarrow{x \to -2^-} 2[2^+] + a[0^-] = 4 - a \end{cases} \to 2 = 4 - a$$

$$a = 2$$

$$\left[\frac{a}{3}\right] = \left[\frac{2}{3}\right] = 0$$

2

$$\lim_{x \to (\frac{\pi}{6})^-} [2\sin x - 1] \to \Big[2\underbrace{\left(\frac{1}{2}^-\right)}_{1^-} - 1\Big] = [0^-] = -1$$

3

$$\lim_{x \to -\frac{1}{2}} [8x^3 - x] \to \Big[\underbrace{8\times\left(-\frac{1}{8}\right)}_{-1} - \left(-\frac{1}{2}\right)\Big] = \left[-\frac{1}{2}\right] = -1$$

چون داخل براکت
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$$\lim_{x \to (-\frac{1}{2})^-} \frac{10x - 5 + \left[\frac{3}{x^2}\right]}{16x - \left[-\frac{2}{x^2}\right]} \to \frac{10x - 5 + [12^-]}{16x - [-8^+]} \to \lim_{x \to (-\frac{1}{2})^-} \frac{10x - 5 + 11}{16x + 8} = \frac{1}{0^-} = -\infty$$

$$-\frac{1}{2} > x \to x^2 > \frac{1}{4} \to \frac{3}{x^2} < 12$$

$$-\frac{1}{2} > x \to x^2 > \frac{1}{4} \to \frac{2}{x^2} < 8 \to -\frac{2}{x^2} > -8$$

5

$$\lim_{x \to 1^+} \frac{\sin^2 \pi x}{[x] + \cos \pi x} \to \frac{\sin^2 \pi}{1 + \cos \pi} = \frac{0}{0} \xrightarrow{\text{رفع ابهام}} \frac{1 - \cos^2 \pi}{1 + \cos \pi} \Longrightarrow 1 - \underbrace{\cos \pi}_{-1} = 2$$

$$\lim_{x\to -1}\frac{\sqrt{2x+3}-\sqrt{3x+4}}{1+\sqrt[3]{x}}\times\frac{\sqrt{2x+3}+\sqrt{3x+4}}{\sqrt{2x+3}+\sqrt{3x+4}}\times\frac{1-\sqrt[3]{x}+\sqrt[3]{x^2}}{1-\sqrt[3]{x}+\sqrt[3]{x^2}}=\frac{\overset{-1}{\cancel{-1-x}}}{\underset{1}{\cancel{1+x}}}\times\frac{\overset{3}{1-\sqrt[3]{x}+\sqrt[3]{x^2}}}{\underset{2}{\sqrt{2x+3}+\sqrt{3x+4}}}$$

$$\Rightarrow=-\frac{3}{2}$$

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$$\lim_{x\to 1}\frac{\overbrace{2x-7\sqrt{x}+5}^{(2\sqrt{x}-5)(\sqrt{x}-1)}}{2x-\sqrt{3x+1}}\times\frac{2x+\sqrt{3x+1}}{2x+\sqrt{3x+1}}=\frac{\overset{-3}{(2\sqrt{x}-5)}\overset{1}{\cancel{(\sqrt{x}-1)}}\times\overset{4}{(2x+\sqrt{3x+1})}}{\underbrace{4x^2-3x-1}_{\underset{5}{(4x+1)}\cancel{(x-1)}}\underset{2}{\cancel{\sqrt{x}+1}}}=-\frac{6}{5}$$

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$$\lim_{x\to 0}\frac{a+\sqrt{bx+c}}{x}=\frac{1}{4}\rightarrow\frac{a+\sqrt{c}}{0}=\frac{1}{4}\rightarrow a=-\sqrt{c}$$

$$\xrightarrow{\text{Hop}}\frac{b}{2\sqrt{bx+c}}=\frac{1}{\cancel{4}\,2}\rightarrow 2b=\sqrt{c}$$

$$\frac{\overset{-\sqrt{c}}{a}\,\overset{\frac{\sqrt{c}}{2}}{b}}{4}=-\frac{1}{2}$$

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$$\lim_{x\to -2\pi}\frac{4+k\left[\frac{x}{\pi}\right]}{\sin x}=+\infty$$

$$x\to -2\pi^{+}:\ \frac{4-2k}{0^{+}}=+\infty\rightarrow 4-2k>0\rightarrow 2>k$$

$$x\to -2\pi^{-}:\ \frac{4-3k}{0^{-}}=+\infty\rightarrow 4-3k<0\rightarrow \frac{4}{3}<k$$

$$\frac{4}{3}<k<2$$

$$[-k]=-2$$

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$$\lim_{x\to 8}\frac{b\sqrt{2+\sqrt[3]{x}}-2b}{ax-b}=\frac{\overset{0}{2b-2b}}{8a-b}\xrightarrow{\text{حد غیر صفر}}8a=b\rightarrow a=\frac{b}{8}$$

$$\lim_{x\to 8}\frac{b\sqrt{2+\sqrt[3]{x}}-2\cancel{b}}{\frac{bx}{8}-\cancel{b}}=\frac{\sqrt{2+\sqrt[3]{x}}-2}{\frac{x}{8}-1}\times\frac{\sqrt{2+\sqrt[3]{x}}+2}{\sqrt{2+\sqrt[3]{x}}+2}=\frac{\overset{1}{\cancel{8}}\cancel{(\sqrt[3]{x}-2)}}{\cancel{(\sqrt[3]{x}-2)}\underset{\cancel{12}\ 3}{(\sqrt[3]{x^2}+2\sqrt[3]{x}+4)}}\times\frac{1}{\underset{2+2}{\sqrt{2+\sqrt[3]{x}}+2}}=\frac{1}{6}$$

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