Date: Subject: (۱۹) باران نسیمی

$$\lim_{x\to -2^+} f(x) = \lim_{x\to -2^-} f(x)$$ -۱

$$x\to -2^+ \Rightarrow \underbrace{2\left[\frac{4^-}{2}\right]}_{2} + \underbrace{a\left[\frac{0^+}{3}\right]}_{0} = 2$$

$$x\to -2^- \Rightarrow \underbrace{2\left[\frac{4^+}{2}\right]}_{4} + a\underbrace{\left[\frac{0^-}{3}\right]}_{-1} \Rightarrow 4-a=2 \Rightarrow \boxed{a=2}$$

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

-۲

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

$$\lim_{x\to -\frac{1}{2}}[8x^3 - x] = \begin{cases} -\frac{1}{2}^+ \to [-1^+ + \frac{1}{2}^-] = -1 \\ -\frac{1}{2}^- \to [-1^- + \frac{1}{2}^+] = -1 \end{cases}$$ -۳

$$\lim_{x\to[-\frac{1}{2}]}[8x^3 - x] = -1$$

$$\lim_{x\to(-\frac{1}{2})^-} \frac{10x - 5 + \overset{-3^-}{\left[\frac{3}{2x}\right]}}{16x - \underbrace{\left[-\frac{2}{x^2}\right]}_{\to -8^+,\ -8}} = \frac{\overbrace{-5^- - 5}^{-10^-} + 11}{-8^- + 8} = \frac{1}{0^-} = -\infty$$ -۴

$$\lim_{x\to 1^+} \frac{\sin^2 \pi x}{[x] + \cos\pi x} =$$ -۵

$$\frac{1-\cos^2\pi x}{1+\cos\pi x} = \frac{(\cancel{1+\cos\pi x})(1-\cos\pi x)}{\cancel{1+\cos\pi x}} = 1 - \cos\pi x = 2$$

$$\lim_{x\to -1} \frac{\sqrt{2x+3} - \sqrt{3x+4}}{1+\sqrt[3]{x}} \xrightarrow{HOP} \frac{\frac{2}{2\sqrt{2x+3}} - \frac{3}{2\sqrt{3x+4}}}{\frac{1}{\underbrace{3\sqrt[3]{x^2}}_{3}}} = \frac{\frac{-1}{2}}{\frac{1}{3}} = \frac{-3}{2}$$ -۶

Date: Subject:

۷-
$$\lim_{x\to 1}\frac{2x-7\sqrt{x}+5}{2x-\sqrt{3x+1}} \xrightarrow{Hop} \frac{2-\frac{7}{2\sqrt{x}}}{2-\frac{3}{2\sqrt{3x+1}}}=\frac{\frac{-3}{2}}{\frac{5}{4}}=\frac{-4}{2}=-2$$

۸-
$$\lim_{x\to 0}\frac{a+\sqrt{bx+c}}{x}=\frac{1}{4} \qquad \frac{ab}{c}=?$$

$$a+\sqrt{bx+c}\xrightarrow{x=0} a+\sqrt{c}=0$$

$$a=-\sqrt{c}$$

$$\xrightarrow{Hop}\frac{b}{2\sqrt{bx+c}}\Rightarrow\frac{1}{4}=\frac{b}{2\sqrt{c}} \qquad \Longrightarrow\frac{ab}{c}=\frac{-\sqrt{c}\times\frac{\sqrt{c}}{2}}{c}=\frac{\frac{-\cancel{c}}{2}}{\frac{\cancel{c}}{1}}=\frac{-1}{2}$$

$$2\sqrt{c}=4b\to\sqrt{c}=2b$$

$$\hookrightarrow b=\frac{\sqrt{c}}{2}$$

۹-
$$\lim_{x\to -2\pi}\frac{4+K[\frac{x}{\pi}]}{\sin x}=+\infty \qquad [-K]=?$$

$$-2\pi^+ \quad \frac{4+K\left[\frac{-1{,}9\pi}{\pi}\right]}{\underbrace{\sin(-2\pi)^+}_{\text{ربع اول}}}=\frac{4-2K}{0^+}\to 4-2K>0$$

$$4>2K\to 2>K$$

$$-2\pi^- \quad \frac{4+K\left[\frac{-2{,}1\pi}{\pi}\right]}{\underbrace{\sin(-2\pi^-)}_{\text{ربع چهارم}}}=\frac{4-3K}{0^-}\to 4-3K<0\to 4<3K$$

$$\frac{4}{3}<K$$

$$\to\frac{4}{3}<K<2\to[-K]=-2$$

۱۰-
$$\lim_{x\to 8}\frac{b\sqrt{2+\sqrt[3]{x}}-2b}{ax-b}\to\frac{8a\sqrt{2+\sqrt[3]{x}}-16a}{ax-8a}=\frac{8\cancel{a}(\sqrt{2+\sqrt[3]{x}}-2)}{\cancel{a}(x-8)}\times\frac{\sqrt{2+\sqrt[3]{x}}+2}{\sqrt{2+\sqrt[3]{x}}+2}$$

$$8a-b=0$$

$$b=8a$$

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

$$\lim_{x\to 8}=\frac{\cancel{8}^{2}\cancel{(x-8)}}{\cancel{(x-8)}\underbrace{(\sqrt{2+\sqrt[3]{x}}+2)}_{\cancel{4}}\underbrace{(\sqrt[3]{x^2}+2\sqrt[3]{x}+4)}_{12\quad 6}}=\frac{1}{6}$$

آذرمهر