فرنیش زنده دل

۱-

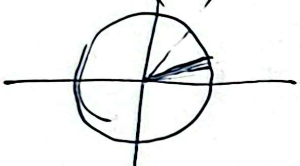
$x \to -2^+ \longrightarrow f(x) = 2\left[\frac{2-(-2^+)}{2}\right]^- + a\left[\frac{(-2^+)+2}{3}\right] = 2 + a(0) = 2$

$x \to -2^- \longrightarrow f(x) = 2\left[\frac{2-(-2^-)}{2}\right] + a\left[\frac{(-2)^-+2}{3}\right] = 4 + a(-1) = 2$

$4 - a = 2 \Rightarrow a = 2 \Rightarrow \left[\frac{a}{3}\right] = \left[\frac{2}{3}\right] = 0$

۲-

$\lim_{x \to (5\pi/6)^-} [2\sin x - 1] = \lim_{x \to (5\pi/6)^-} \left[2a\left(\frac{1}{2}^-\right) - 1\right] = \lim_{x \to (5\pi/6)^-} [1^- - 1] = 0 - 1$



۳-

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

$\longrightarrow x \to -\frac{1}{2}^+ \longrightarrow \lim_{x \to -1/2^+} \left[-\frac{1}{2}^+\left(\frac{1}{4}^+ \times 8 - 1\right)\right]$, 1^+

$= \lim_{x \to -1/2^+} \left[-\frac{1}{2}^+(1^+)\right] = \lim_{x \to -1/2^+} \left[\left(-\frac{1}{2}\right)^+\right] = -1$

$\longrightarrow x \to -\frac{1}{2}^- \longrightarrow \lim_{x \to -1/2^-} \left[-\frac{1}{2}^-\left(\frac{1}{4} \times 8 - 1\right)\right]$, 1^- $= \lim_{x \to -1/2^-} \left[\left(-\frac{1}{2}\right)^-\right]$

$$\lim_{x \to 1^+} \frac{\sin^2(\pi x)}{\cos(\pi x) + [x]} = \frac{\sin^2(\pi^+)}{\cos(\pi^+) + 1} \overset{\text{همارزی}}{\approx} \frac{\pi^2}{1 - \frac{\pi^2}{2} + 1} = \frac{\pi^2}{\frac{\pi^2}{2}} = 2$$ (۵

(۶

$$\lim_{x \to -1} \frac{\sqrt{2x-3} - \sqrt{3x+4}}{1+\sqrt[3]{x}} \times \frac{\sqrt{2x+3} + \sqrt{3x+4}}{\sqrt{2x+3} + \sqrt{3x+4}} \times \frac{(1 - \sqrt[3]{x} + \sqrt[3]{x^2})}{(1 + \sqrt[3]{x^2} - \sqrt[3]{x})}$$

$$= \frac{2x-3-3x-4}{1+x} \times \frac{1 - \sqrt[3]{x} + \sqrt[3]{x^2}}{(\sqrt{2x+3} + \sqrt{3x+4})} = -1 \times \frac{(1-(-1)+1)}{\sqrt{1}+\sqrt{1}} = -1 \times \frac{3}{2} = -\frac{3}{2}$$

$$\lim_{x \to 1} \frac{2x - 7\sqrt{x} + 5}{2x - \sqrt{3x+1}} = \frac{2 - \frac{7}{2\sqrt{x}}}{2 - \frac{3}{2\sqrt{3x+1}}} = \frac{2 - \frac{7}{2}}{2 - \frac{3}{2\sqrt{4}}} = \frac{-\frac{3}{2}}{\frac{5}{4}} = -\frac{6}{5}$$ ۷)

(۲

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

$$\Rightarrow a^2=c$$

$$\Rightarrow \frac{a+\sqrt{bx+c}}{x}\times\frac{a-\sqrt{bx+c}}{a-\sqrt{bx+c}}$$

$$=\frac{a^2-\left(\sqrt{bx+c}\right)^2}{x\left(a-\sqrt{bx+c}\right)}=\frac{1}{4} \Rightarrow \frac{(bx-c)-\cancel{a^2}\to c}{x\left(\sqrt{bx+c}-a\right)}=\frac{1}{4}$$

$$\Rightarrow \frac{b\cancel{x}}{\cancel{x}\left(\sqrt{bx+c}-a\right)}=\frac{1}{4}$$

$$\Rightarrow \frac{b}{\sqrt{bx+c}-a}=\frac{1}{4} \xrightarrow{x\to 0} \Rightarrow 4b=\sqrt{c}-a \Rightarrow 4b=2\sqrt{c} \Rightarrow 4b=-2a \Rightarrow b=-\frac{1}{2}a$$

$$\Rightarrow \frac{ab}{c}=\frac{-\frac{1}{2}a\times a}{a^2}=-\frac{1}{2}$$

$x \to -۲k^+ \to \left[\frac{-۲k^+}{k}\right] = -۲ \longrightarrow \lim \frac{٤ - ۲k}{۰^-} = +\infty \Rightarrow ٤ < ۲k$ (۴

$\Rightarrow \sin \pi x = ۰^-$

$\Rightarrow k > ۲$

$x \to -۲k^- \to \left[\frac{-۲k^-}{k}\right] = -۳ \to \lim \frac{٤ - ۳k}{۰^-} = +\infty \Rightarrow ٤ < ۳k \Rightarrow k > \frac{٤}{۳}$

$\Rightarrow [-k] = -۳$

$\Rightarrow k > ۲$

$$\lim_{x \to ۸} \frac{b\sqrt{۲+\sqrt[۳]{x}} - ۲b}{ax - b} = \frac{b\sqrt{\cancel{۲+۲}}_{٤} - ۲b}{۸a - b} = \frac{۲b - ۲b}{۸a - ۲b} \to \overset{=۱}{۸a = ۲b}$$ (۱۰