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امیرمهدی اسماعیلی فرد دوازدهم ب A

۱- $\lim_{x\to -2^+} f(x) = \lim_{x\to -2^-} f(x) \to 2[2^-] + a[0^+] = 2[2^+] + a[0^-]$

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

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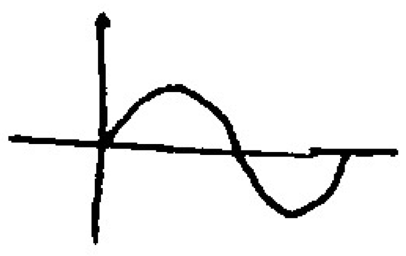
۲- 

$\lim_{x\to \frac{\pi}{6}^-} f(x) = [0^-] = \boxed{-1}$ ✓

تابع در نقطه مورد نظر صعودی است

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۳- $\lim_{x\to -\frac{1}{2}} [8x^3 - x] = \left[-\frac{1}{2}\right] = \boxed{-1}$ ✓

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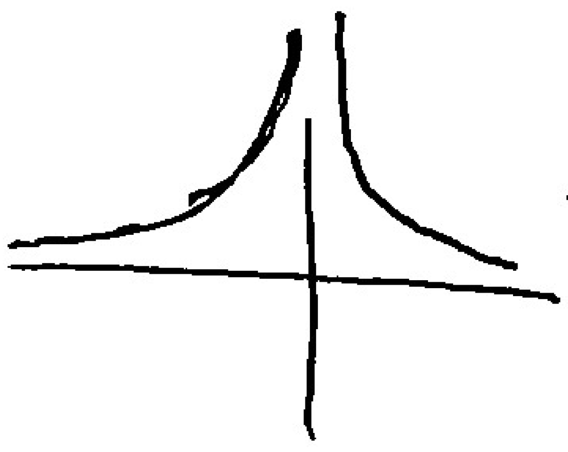
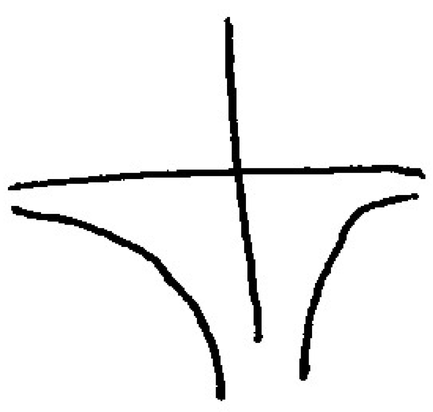
۴- 

$f(x) = \frac{1}{x^2}$



$f(x) = -\frac{1}{x^2}$

$\lim_{x\to(-\frac{1}{2})^-} \frac{10x-5+\left[\frac{3}{x^2}\right]}{16x-\left[-\frac{2}{x^2}\right]} = \lim_{x\to(-\frac{1}{2})^-} \frac{10x+23-5}{16x+8}$

$\lim_{x\to(-\frac{1}{2})^-} \frac{10x+18}{16x+8} = \frac{13}{0^-} = -\infty$ ✓

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

$= \lim_{x\to 1^+} 1-\cos \pi x = \boxed{2}$ ✓

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۶- $\lim_{x\to -1} f(x) = \frac{0}{0}$ مبهم $\xrightarrow{Hop} \lim_{x\to -1} \frac{\frac{2}{2\sqrt{2x+3}} - \frac{3}{2\sqrt{3x+4}}}{\frac{1}{3\sqrt[3]{x^2}}} = \boxed{-1/5}$ ✓

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$\lim_{x\to 1} f(x) = \frac{0}{0}$ مبهم $\xrightarrow{HoP} \lim_{x\to 1} \dfrac{2-\dfrac{7}{2\sqrt{x}}}{2-\dfrac{3}{2\sqrt{3x+1}}} = \boxed{-1.2}$ — ۷

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$\lim_{x\to 0} \dfrac{a+\sqrt{bx+c}}{x} = \dfrac{1}{4}$ $\quad a+\sqrt{\cancel{bx}+c}=0 \to a=-\sqrt{c}$ — ۸

$\xrightarrow{HoP} \lim_{x\to 0} \dfrac{b}{2\sqrt{bx+c}} = \dfrac{1}{4} \to 2b=\sqrt{c}$

$\dfrac{ab}{c} = ? \to -\dfrac{\sqrt{c}}{c} \times \dfrac{\sqrt{c}}{2} = \boxed{-\dfrac{1}{2}}$

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$\lim_{x\to -2\pi} \dfrac{2+k\left[\frac{x}{\pi}\right]}{\sin x} = +\infty \to \lim_{x\to -2\pi^+} f(x) = \lim_{x\to -2\pi^-} f(x) = +\infty$ — ۹

$\lim_{x\to -2\pi^+} \dfrac{2-2k}{\cancel{\sin x}_{\,0^+}} = +\infty \qquad 2-2k>0$

$\lim_{x\to -2\pi^-} \dfrac{2-3k}{\cancel{\sin x}_{\,0^-}} = +\infty \qquad 2-3k<0$

$\xrightarrow{\cap} \dfrac{2}{3}<k<1$

$\to [-k] = \boxed{-1}$

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$\lim_{x\to(-2\pi)^-} = \dfrac{4+K\left[\frac{x}{\pi}\right]}{\sin x} = \dfrac{4-3K}{0^-} = +\infty \to 4-3K<0 \to K>\dfrac{4}{3}$ (I)

سوال ۹

$\lim_{x\to(-2\pi)^+} = \dfrac{4+K\left[\frac{x}{\pi}\right]}{\sin x} = \dfrac{4-2K}{0^+} = +\infty \to 4-2K>0 \to K<2$ (II)

$\xrightarrow{(I)\cap(II)} \dfrac{4}{3}<K<2 \to -2<-K<-\dfrac{4}{3} \to [-K] = -2$

$\lim_{x\to 8} = \dfrac{0}{0}$ مبهم $\to 8a-b=0 \to \lim_{x\to 8} \dfrac{8a\sqrt{2+\sqrt[3]{x}}-16a}{ax-8a}$ — ۱۰

$\to \lim_{x\to 8} \dfrac{8\sqrt{2+\sqrt[3]{x}}-16}{x-8} \xrightarrow{HoP} \lim_{x\to 8} 8\times\dfrac{(2+\sqrt[3]{x})'}{2\sqrt{2+\sqrt[3]{x}}} = \lim_{x\to 8} \dfrac{4\times\dfrac{1}{3\sqrt[3]{x^2}}}{\sqrt{2+\sqrt[3]{x}}} = \boxed{\dfrac{1}{6}}$

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