نام و نام خانوادگی: حسام رفیع زاده «به نام خدا» 19,25

متقطع: دوازدهم پسر A

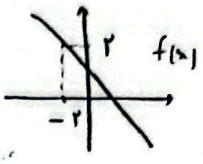
شماره: 19

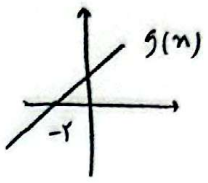
-1

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

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

$$g(x)=\frac{1}{3}x+\frac{2}{3}$$





$$\lim_{x\to(-2)^+} 2[1]+a[0]=2$$

$$\rightarrow f-a=2 \rightarrow a=2$$

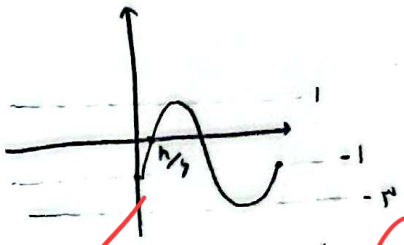
$$\lim_{x\to(-2)^-} 2[2]+a[0^-]=f-a$$

(2)

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

-2

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



✓ (2)

-3

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

با توجه به مطلب پایین

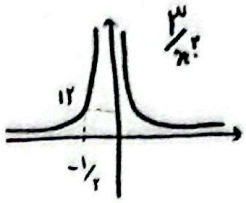
$$\lim_{x\to(-\frac{1}{2})^-}[(-\frac{1}{2})^-]=-1$$ ✓

(2)

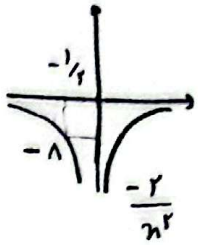
رسم نمودار: $f'(x)=2(x^2-1) \rightarrow f'(-\frac{1}{2})=24\times\frac{1}{4}-1=5$ شیب مثبت

۴-

$$\lim_{x\to(-\frac{1}{2})^-} \frac{10x-5+\left[\frac{3}{x^2}\right]}{14x-\left[\frac{-2}{x^2}\right]} = \lim_{x\to-\frac{1}{2}^-} \frac{10x-5+11}{14x-(-8)} = \frac{10x+6}{14x+8}$$



$$= \frac{-5+6}{-8+8} = \frac{\text{عدد}}{\text{صفر}} \to \frac{+1}{0^-} = +\infty \quad \boxed{-\infty}$$



۱۷۵

۵-

$$\lim_{x\to1^+} \frac{\sin^2\pi x}{[x]+\cos\pi x} = \lim_{x\to1^+} \frac{\sin^2\pi x}{1+\cos\pi x} = \frac{1-\cos^2\pi x}{1+\cos\pi x} = \frac{(1-\cos\pi x)(1+\cos\pi x)}{1+\cos\pi x}$$

$$= \lim_{x\to1^+} 1-\cos\pi x = \boxed{2}$$ ✓

۲

۶-

$$\lim_{x\to-1} \frac{\sqrt{2x+3}-\sqrt{3x+4}}{1+\sqrt[3]{x}} = \frac{0}{0} \xrightarrow{\text{مزدوج}} \frac{2x+3-(3x+4)}{(1+\sqrt[3]{x})(\sqrt{2x+3}+\sqrt{3x+4})} \xrightarrow{\text{ضرب در مزدوج}}$$

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

۲

-۷

$$\lim_{x\to 1}\frac{2x-\sqrt{x}+5}{2x-\sqrt{3x+1}}=\frac{(\sqrt{x}-1)(2\sqrt{x}-5)}{2x-\sqrt{3x+1}}\xrightarrow{\times \text{مزدوج}}\lim_{x\to 1}\frac{(\sqrt{x}-1)(2\sqrt{x}-5)(2x+\sqrt{3x+1})}{4x^2-3x-1}$$

$$=\lim_{x\to 1}\frac{(\sqrt{x}-1)(2\sqrt{x}-5)(2x+\sqrt{3x+1})}{(x-1)(4x+1)}=\lim_{x\to 1}\frac{(\sqrt{x}-1)(2\sqrt{x}-5)(2x+\sqrt{3x+1})}{(\sqrt{x}-1)(\sqrt{x}+1)(4x+1)}\xrightarrow{\text{جایگذاری}}$$

(۲)

$$\lim_{x\to 1}\frac{-3\times 4}{4\times 5}=\boxed{\frac{-6}{5}}$$ ✓

-۸

(۱٫۵)

$$\lim_{x\to 0}\frac{a+\sqrt{bx+c}}{x}=\frac{1}{4}\xrightarrow[\text{بدون}]{\text{این به صورت}}\frac{0}{0}$$

$$x=0\to a+\sqrt{b(0)+c}=0\to\sqrt{c}=-a\to c=a^2\ (1)$$

$a<0$ چون $\sqrt{c}$ مثبت $\quad a=-\sqrt{c}$

$$\xrightarrow{H}\lim_{x\to 0}\frac{\frac{b}{2\sqrt{bx+c}}}{1}=\frac{1}{4}\to\frac{b}{2\sqrt{c}}=\frac{1}{4}\to 2b=\sqrt{c}\to c=4b^2\ (2)$$

$$\to a^2=4b^2\to |a|=|2b|$$

$$\frac{ab}{c}\overset{(1)}{=}\frac{ab}{a^2}=\frac{b}{a}=\frac{b}{2b}=\boxed{-\frac{1}{2}}$$

-۹

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

$$\lim_{x\to(-2\pi)^+}\frac{4+k\left[\frac{x}{\pi}\right]}{\sin x}=\frac{4-2k}{\sin x}=\lim_{x\to(-2\pi)^+}\frac{4-2k}{0^+}=+\infty\ (1)$$

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

$$(1)\to 4-2k>0\to k<2$$

$$(2)\to 4-3k<0\to 3k>4\to k>\frac{4}{3}$$

$$\to\frac{4}{3}<k<2\xrightarrow{\times(-1)}-2<-k<\frac{-4}{3}\xrightarrow{[\ ]}[-k]=-2$$ ✓

(۲)

۱۰-

$$\lim_{x\to 8}\frac{b\sqrt{2+\sqrt[3]{x}}-2b}{ax-b}=\frac{2b-2b}{8a-b}=0 \text{ غ ق}\ \to \frac{0}{0}\ \to\ 8a-b=0\ \to\ 8a=b\ \textcircled{1}$$

چون گفته مزنیست

۲

$$\textcircled{11}\to \lim_{x\to 8}\frac{b\times\frac{1}{2\sqrt{2+\sqrt[3]{x}}}\times\frac{1}{\sqrt[3]{x^2}}}{8}=\lim_{x\to 8}\frac{\frac{b}{4}\times\frac{1}{12}}{a}=\frac{b}{4\times 12\times a}\xrightarrow{\textcircled{1}}\frac{2\cancel{8}}{\cancel{4}\times 12\times\cancel{8}}=\boxed{\frac{1}{4}}$$