آدرینا حسینی   کلاس دوازدهم حمید دفتر A   غروثلث ۱۹

۱

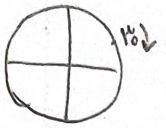
$f(x)=2\left[\frac{2-x}{2}\right]+a\left[\frac{x+2}{3}\right]$

$\lim_{x\to -2^+} 2+2\left[-\frac{x}{2}\right]+a\left[\frac{x+2}{3}\right] \longrightarrow 2+2[1^-]+a[0^+]=2$ $\left[\frac{a}{3}\right]=\left[\frac{2}{3}\right]=0$

$\lim_{x\to -2^-} 2+2\left[\frac{-x}{2}\right]+a\left[\frac{x+2}{3}\right] \longrightarrow 2+2[1^+]+a[0^-]=4-a=2 \longrightarrow \underline{a=2}$

۲

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



۳

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

۴

$\lim_{x\to(\frac{1}{2})^-}\frac{10x-5+\left[\frac{3}{x^2}\right]}{16x-\left[\frac{-2}{x^2}\right]}=\frac{10\times\frac{1^-}{\cancel{2}}-5+\left[\frac{3}{\frac{1}{4}}\right]^+}{16\times\frac{1^-}{2}-\left[\frac{-2}{\frac{1}{4}}\right]^+}=\frac{-5-5+11}{-8^-+8}=\frac{1}{0^-}=-\infty$

۵

$\lim_{x\to1^+}\frac{\sin^2\pi x}{[x]+\cos\pi x}=\frac{\sin^2\pi x}{1+\cos\pi x}=\frac{1-\cos^2\pi x}{1+\cos\pi x}=\frac{(1-\cos\pi x)\cancel{(1+\cos\pi x)}}{\cancel{1+\cos\pi x}}=1-\cos\pi x=0$

۶

$\lim_{x\to -1}\frac{\sqrt{2x+3}-\sqrt{3x+4}}{1+\sqrt[3]{x}}=\frac{0}{0}\xrightarrow{HOP}\frac{\frac{2}{2\sqrt{2x+3}}-\frac{3}{2\sqrt{3x+4}}}{\frac{1}{3\sqrt[3]{x^2}}}=\frac{\frac{2}{2}-\frac{3}{2}}{\frac{1}{3}}=\frac{-\frac{1}{2}}{\frac{1}{3}}=\boxed{-\frac{3}{2}}$

۷

$\lim_{x\to1}\frac{2x-7\sqrt{x}+5}{2x-\sqrt{3x+1}}=\frac{0}{0}\xrightarrow{HOP}\frac{2-\frac{7}{2\sqrt{x}}}{2-\frac{3}{2\sqrt{3x+1}}}=\frac{2-\frac{7}{2}}{2-\frac{3}{4}}=\frac{-\frac{3}{2}}{\frac{1}{4}}=-3$

۸

$\lim_{x\to0}\frac{a+\sqrt{bx+c}}{x}=\frac{1}{4}\longrightarrow$ باید ریشه مخرج صورت صفر بشه $\longrightarrow a+\sqrt{c}=0\longrightarrow\sqrt{c}=-a\longrightarrow a<0$

$\xrightarrow{HOP}\frac{b}{2\sqrt{bx+c}}=\frac{b}{\cancel{2}\sqrt{c}}=\frac{1}{\cancel{4}2}\longrightarrow b=1,\ c=4,\ a=-2\longrightarrow\frac{ab}{c}=\frac{-2}{4}=\frac{-1}{2}$

$\boxed{۹}$

$$\lim_{x\to -۲\pi^+} \frac{۴+k\left[\frac{x}{\pi}\right]}{\sin x} = \frac{۴+k\left[\frac{-۲\pi^+}{\pi}\right]}{۰^+} = \frac{۴-۲k}{۰^+} = +\infty \longrightarrow ۴-۲k>۰ \longrightarrow ۴>۲k \longrightarrow ۲>k$$

$$\lim_{x\to -۲\pi^-} \frac{۴+k\left[\frac{-۲\pi^-}{\pi}\right]}{\sin(-۲\pi^-)} = \frac{۴-۳k}{۰^-} = +\infty \longrightarrow ۴-۳k<۰ \longrightarrow k>\frac{۴}{۳}$$

$$\longrightarrow ۲>k>\frac{۴}{۳} \longrightarrow \left[-۲<-k<-\frac{۴}{۳}\right] \longrightarrow [-k] = \boxed{-۲}$$

$\boxed{۱۰}$

$$\lim_{x\to ۸} \frac{b\sqrt{۲+\sqrt[۳]{x}}-۲b}{ax-b} = \frac{\cancel{۲b-۲b}}{۸a-b} = \frac{۰}{۰} \xrightarrow{HOP} \frac{\frac{b\times\frac{۱}{۳\sqrt[۳]{x^۲}}}{۲\sqrt{۲+\sqrt[۳]{x}}}}{\frac{b}{۸}} = \frac{\frac{\frac{b}{۱۲}}{\frac{۴}{۱}}}{\frac{b}{۸}} \longrightarrow \frac{b}{۴۸} = \frac{۸}{۴۸} = \frac{۱}{۶}$$

$$۸a=b \longrightarrow a=\frac{b}{۸}$$