آیدا نامداری
دوازدهم دختران B
تکلیف ۲۰

۱۸

۱

$$\lim_{x\to 2}\frac{2x-5}{x^2+ax+b}=-\infty \qquad \frac{-1}{(\quad)} \qquad \begin{array}{c|c} & 0 \\ + & + \end{array}$$

$(\quad) \to 0^+$ باید شود

$(x-2)^2$

$x^2-4x+4 \qquad a=-4,\; b=4 \qquad a+b=0$

۲

۲

$$\lim_{x\to\sqrt[3]{4}}\frac{x}{x^2+ax+b}=+\infty \qquad \frac{+}{0^+}$$

$(x-\sqrt[3]{4})^2 \qquad x^2-2x\sqrt[3]{4}+\sqrt[3]{16} \qquad \left[\frac{b}{a}\right] \qquad \left[\frac{\sqrt[3]{16}}{-2\sqrt[3]{4}}\right]$

$a=-2\sqrt[3]{4}$

$b=\sqrt[3]{16}$

$\left[\frac{\sqrt[3]{4}}{-2}\right]=-1$

۲

۳

$$\lim_{x\to\left(\frac{1}{\sqrt{3}}\right)^+}\frac{[-x]+a}{\left|\frac{\sqrt{3}}{3}x+a\right|+a}=-\infty \qquad \frac{-1+a}{0^+}=-\infty \qquad \left[-\frac{1}{6}\right]=-1$$

$\left|\frac{1}{3}+a\right|+a=0 \qquad \frac{1}{3}+2a=0 \qquad -2a=\frac{1}{3} \qquad a=-\frac{1}{6}$

$-\frac{1}{3}-a+a=0 \quad \times$

۲

۴

$$\lim_{x\to\left(-\frac{1}{2}\right)^+}\frac{16x-\left[-\frac{2}{x^2}\right]}{24x+\left[\frac{3}{x^2}\right]} \qquad \frac{16x+8}{24x+12} \xrightarrow{hop} \frac{16}{24} \to \frac{4}{6} \to \frac{2}{3}$$

نامعادله حل کن ... !

۱,۵

$\frac{-2}{\frac{1}{4}} \quad [-8^+] \to -8$

$\frac{3}{\frac{1}{4}^-} \to 12^+$

۵

$$\lim_{x\to 2^+}\frac{x^2-4}{x^3-[x^3]}=\frac{x^2-4}{x^3-8} \xrightarrow{hop} \frac{2x}{3x^2}=\frac{4}{12}=\frac{1}{3}$$

۲

۶

$$\lim_{x\to -8}\frac{x^2+10x+16}{12+6\sqrt[3]{x}} \xrightarrow{hop} \frac{2x+10}{\frac{6}{3\sqrt[3]{x^2}}}=\frac{-6}{\frac{6}{12}} \quad \frac{-6\times 12}{6}=-12$$

۲

Scanned with CamScanner

$\boxed{۷}$

$$\lim_{x\to 0^-}\frac{\sqrt{۲+۳x}-\sqrt{۲-x}}{\sqrt{1-\cos x}}\quad \frac{\sqrt{۲+۳x}-\sqrt{۲-x}}{\sqrt{۲\sin^۲\frac{x}{۲}}}=\frac{\sqrt{۲+۳x}-\sqrt{۲-x}}{-\sqrt{۲}\sin\frac{x}{۲}}\xrightarrow{hop}$$

$$\sqrt{۲}\,|\underbrace{\sin\tfrac{x}{۲}}_{-}|$$

$$\frac{\frac{۳}{۲\sqrt{۲+۳x}}+\frac{1}{۲\sqrt{۲-x}}}{-\sqrt{۲}\times\cancel{\cos}\frac{x}{۲}\times\frac{1}{۲}}\quad \frac{\frac{۳}{۲\sqrt{۲}}+\frac{1}{۲\sqrt{۲}}}{\frac{-\sqrt{۲}}{۲}}\quad \frac{\frac{۴}{۲\sqrt{۲}}}{\frac{-\sqrt{۲}}{۲}}=\frac{۸}{-۴}=-۲$$

۲

$\boxed{۸}$

$$\lim_{x\to 0}\frac{k+\cos(\sqrt{a}x)}{kx^۲}=۳\qquad \frac{-1+\cos(\sqrt{a}x)}{-x^۲}\xrightarrow{hop}\frac{-\sin\sqrt{a}x\times\sqrt{a}}{-۲x}\xrightarrow{hop}$$

۲

$$\underline{k+1=0}\rightarrow k=-1$$

$$\frac{a}{-1}=-۴$$

$$\frac{-\overset{-1}{\cos\sqrt{a}x}\times\sqrt{a}\times\sqrt{a}}{-۲}\quad \frac{-a}{-۲}=\frac{a}{۲}=۳\quad a=۴$$

$\boxed{۹}$

۰/۵

$$\lim_{x\to ۳a^+}\frac{۲\sqrt{x-۳a}+\overset{۳\sqrt{۳a}}{۳\sqrt{x}}-\sqrt{۲۷a}}{\sqrt{x^۲-۹a^۲}}\rightarrow\frac{0}{0}$$

$$\sqrt{x+۳a}\times\sqrt{x-۳a}$$

$\boxed{۱۰}$ ناحیه سوم

$$\lim_{x\to -1}\frac{1-k\overset{-1}{[x]}}{x^۲-1}=-\infty\quad \begin{cases}\rightarrow -1^+ & \frac{1+k}{0^-}=-\infty\\ \rightarrow -1^- & \frac{1+۲k}{0^+}=-\infty\end{cases}$$

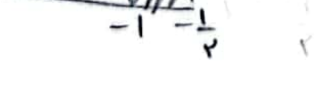
۲

$-\frac{\pi}{۲}\quad [-\pi$ $\qquad \cos-\pi\ \ -1$ $\qquad \cos-\frac{\pi}{۲}\ \ 0$

$1+k>0\qquad k>-1$

$1+۲k<0\qquad ۲k<-1$

$k<-\frac{1}{۲}$



Scanned with CamScanner

۴

$$x > -\frac{1}{2} \rightarrow x^2 < \frac{1}{4} \rightarrow \frac{1}{x^2} > 4 \rightarrow \frac{3}{x^2} > 12 \rightsquigarrow \left[\frac{3}{x^2}\right] = 12$$

$$\hookrightarrow -\frac{2}{x^2} < -8 \rightsquigarrow \left[-\frac{2}{x^2}\right] = -9$$

$$\lim_{x \to (-\frac{1}{2})^+} \frac{16x + 9}{24x + 12} = \frac{-8 + 9}{-12^+ + 12} = \frac{1}{0^+} = \boxed{+\infty}$$

۹

$$\lim_{x \to 3a^+} \frac{2\sqrt{\cancel{x-3a}}}{\sqrt{\cancel{x-3a}}\sqrt{x+3a}} + \frac{3(\sqrt{x} - \sqrt{3a})}{\sqrt{x-3a}\sqrt{x+3a}} = \lim_{x \to 3a^+} \frac{2}{\sqrt{6a}} + \frac{3(\sqrt{x} - \sqrt{3a})}{\sqrt{x-3a}\sqrt{x+3a}} \times \frac{\sqrt{x} + \sqrt{3a}}{\sqrt{x} + \sqrt{3a}}$$

$$\lim_{x \to 3a^+} \frac{2}{\sqrt{6a}} + \frac{3(\overset{\sqrt{x-3a}}{\cancel{x-3a}})}{\sqrt{\cancel{x-3a}}\sqrt{x+3a}(\sqrt{x} + \sqrt{3a})} = \lim_{x \to 3a^+} \left(\frac{2}{\sqrt{6a}} + \frac{3\overset{0}{\sqrt{\cancel{x-3a}}}}{\cancel{\sqrt{x+3a}}(\sqrt{x} + \sqrt{3a})}\right) = \lim_{x \to 3a^+} \frac{2}{\sqrt{6a}} + 0 \rightsquigarrow \frac{2}{\sqrt{6a}} = \sqrt{\frac{4}{6a}} = \sqrt{\frac{2}{3a}}$$