پارمیس نبی زاده ، دوازدهم دختر B — شماره تکلیف ۲۰

۱)
$$\lim_{x\to 2}\frac{2x-5}{x^2+ax+b}=-\infty \rightarrow \frac{-1}{x^2+ax+b}=-\infty$$

$$x^2+ax+b=0^+ \rightarrow (x-2)^2=x^2-4x+4$$

$$a=-4 \qquad b=4 \qquad a+b=0$$

۲)
$$\lim_{x\to \sqrt[3]{4}}\frac{x}{x^2+ax+b}=+\infty \rightarrow \frac{\sqrt[3]{4}}{x^2+ax+b}=+\infty$$

$$x^2+ax+b=0^+ \rightarrow (x-\sqrt[3]{4})^2=x^2-2\sqrt[3]{4}\,x+\sqrt[3]{16}$$

$$a=-\sqrt[3]{16} \qquad b=\sqrt[3]{16} \qquad \left[\frac{b}{a}\right]=-1$$

۳)
$$\lim_{x\to \left(\frac{1}{\sqrt{3}}\right)^+}\frac{[-x]+a}{\left|\frac{\sqrt{3}}{3}x+a\right|+a} = \frac{a-1}{\left|\frac{1}{3}+a\right|+a}=-\infty$$

$$\rightarrow x>\frac{1}{\sqrt{3}} \qquad \frac{\sqrt{3}}{3}x>\frac{1}{3}$$

$$\left|\frac{1}{3}+a\right|+a=0^+ \quad \begin{cases} \left|a+\frac{1}{3}\right|>0 \rightarrow 2a+\frac{1}{3}=0 & a=\frac{-1}{6} \\ \left|a+\frac{1}{3}\right|<0 \rightarrow a-a-\frac{1}{3}=-\frac{1}{3} & \times \end{cases}$$

$$a=\frac{-1}{6} \rightarrow \frac{-\frac{7}{6}}{0^+}=-\infty$$

۴)
$$x>-\frac{1}{2} \qquad x^2<\frac{1}{4} \qquad \frac{1}{x^2}>4 \qquad \frac{-1}{x^2}<-4$$

$$\lim_{x\to\left(-\frac{1}{2}\right)^+}\frac{16x-[-2(4^+)]}{24x+[3(4^+)]}=\frac{16x+9}{24x+12}=\frac{1}{0^+}=+\infty$$

۵) $\lim_{x\to 2^+} \dfrac{x^2-4}{x^3-8} = \dfrac{\cancel{(x-2)}(x+2)}{\cancel{(x-2)}(x^2+4+2x)} = \dfrac{4}{12} = \dfrac{1}{3}$

۶) $\lim_{x\to -8} \dfrac{x^2+10x+16}{12+6\sqrt[3]{x}} = \dfrac{(x+2)(x+8)}{6(2+\sqrt[3]{x})} \times \dfrac{\text{مثل مخرج}}{\text{مثل مخرج}}$

$= \dfrac{(x+2)\cancel{(x+8)}(4+\sqrt[3]{x^2}-2\sqrt[3]{x})}{6\cancel{(x+8)}} = \dfrac{-6(4+4+4)}{6} = -12$

۷) $\lim_{x\to 0^-} \dfrac{\sqrt{2+3x}-\sqrt{2-x}}{\sqrt{1-\cos x}} \times \dfrac{\text{مزدوج ص}}{\text{مزدوج ص}} = \dfrac{(2+3x)-(2-x)}{\sqrt{1-\cos x}\,(\sqrt{2+3x}+\sqrt{2-x})}$

$= \dfrac{4x}{\sqrt{\frac{x^2}{2}} \times 2\sqrt{2}} = \dfrac{4x}{\frac{|x|}{\sqrt{2}} \times 2\sqrt{2}} = \dfrac{2x}{-x} = (-2)$

۸) $\lim_{x\to 0} \dfrac{k+\cos\sqrt{a}\,x}{kx^2} = \dfrac{k+1-\frac{ax^2}{2}}{kx^2} = 3$

$\dfrac{2k+2-ax^2}{2kx^2} = \dfrac{\ }{0} = 3 \qquad 2k+2=0 \to k=-1$

$\dfrac{-ax^2}{-2x^2} = \dfrac{a}{2} = 3 \to a=6$

$\dfrac{a}{k} = \dfrac{6}{-1} = -6$

۹) $\text{hop} \to \dfrac{\dfrac{1}{\sqrt{x-3a}} + \cancel{\dfrac{3}{2\sqrt{x}}} - \cancel{\dfrac{3}{2\sqrt{x}}}}{\dfrac{x}{\sqrt{x^2-9a^2}}} = \dfrac{\sqrt{x^2-9a^2}}{x\sqrt{x-3a}}$

$= \dfrac{\sqrt{x+3a} \times \sqrt{x-3a}}{x \times \sqrt{x-3a}} = \dfrac{\sqrt{x+3a}}{x} = \dfrac{\sqrt{6a}}{3a}$

$$\lim_{x \to (-1)^+} \frac{1-k[x]}{x^2-1} = \frac{1+k}{x^2-1} = \frac{1+k}{0^-} = -\infty \quad (1.$$

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

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

$$1+2k<0 \qquad k<\frac{-1}{2} \qquad \Rightarrow k=\left(-1, \frac{-1}{2}\right)$$

$$x = k\pi = \left(-\pi, \frac{-\pi}{2}\right)$$

$$y = \cos k\pi = \left(\cos -\pi, \cos \frac{-\pi}{2}\right) = (-1, 0)$$

$x$ و $y$ هردو منفی اند $\Leftarrow$ ناحیه ۳ محور