نام و نام خانوادگی ستایش معصوم‌زاده ۲۰ پاسخنامه تشریحی تکلیف شماره ..۲۵... کلاس دوازدهم A

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

$2x-5 \xrightarrow{x=2} 2(2)-5=-1 \longrightarrow$ مخرج $=0^+$ به ازای ۲،۲

$(x-2)^2 = x^2+ax+b$

$\left.\begin{matrix} a=-4 \\ b=4 \end{matrix}\right\} a+b=0$

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

مخرج $=0^+ \longrightarrow (\sqrt[3]{4})^-,\ (\sqrt[3]{4})^+$ به ازای

$\left.\begin{matrix} a=-\sqrt[3]{32} \\ b=\sqrt[3]{16} \end{matrix}\right\rangle \left[\frac{b}{a}\right] = \left[\sqrt[3]{\frac{-16}{32}}\right] = -1$

بین ۰ و ۱-

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

$x=\frac{1}{\sqrt{3}} \to -x = \frac{-\sqrt{3}}{3} \to [-x]=-1$

$\frac{\sqrt{3}}{3}x = \frac{1}{3}$

$$\frac{a-1}{a+\left|\frac{1}{3}+a\right|}$$

$a>-\frac{1}{3} \to \frac{a-1}{2a+\frac{1}{3}} = -\infty \to a=\left(-\frac{1}{6}\right)^+ \to \frac{-\frac{7}{6}}{0^+} = -\infty$

$a<-\frac{1}{3} \to \frac{a-1}{a-\frac{1}{3}-a} = -\infty$

$[a] = \left[-\frac{1}{6}\right] = -1$

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$$\lim_{x\to \left(-\frac{1}{2}\right)^+} \frac{16x - \left[\frac{-2}{x^2}\right]}{24x + \left[\frac{3}{x^2}\right]}$$

$x>-\frac{1}{2} \longrightarrow x^2<\frac{1}{4} \longrightarrow \frac{1}{x^2}>4$

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

$\frac{3}{x^2} > 12 \longrightarrow \left[\frac{3}{x^2}\right] = 12$

$$\frac{16x-(-9)}{24x+12} = \frac{+1}{0^+} = +\infty$$

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

$x^3 = 8^+ \longrightarrow [x^3]=8$

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$$\lim_{x\to -8} \frac{x^2+10x+16}{12+6\sqrt[3]{x}} = \frac{64-80+16}{12-12} = \frac{0}{0}$$

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$$\frac{x^2+10x+16}{6(2+\sqrt[3]{x})} \times \frac{\sqrt[3]{x^2}-2\sqrt[3]{x}+4}{\sqrt[3]{x^2}-2\sqrt[3]{x}+4} = \frac{(x+2)\cancel{(x+8)}(\sqrt[3]{x^2}-2\sqrt[3]{x}+4)}{6\cancel{(x+8)}} \xrightarrow[x=-8]{} \frac{-6\times 12}{6} = -12$$ ۶

-12

$$\lim \frac{\sqrt{2+3x}-\sqrt{2-x}}{\sqrt{1-\cos x}} = \frac{\sqrt{2}-\sqrt{2}}{\sqrt{1-1}} = \frac{0}{0} \longrightarrow (\text{رفع ابهام}) \Rightarrow \times \frac{\sqrt{1+\cos x}}{\sqrt{1+\cos x}} \times \frac{\sqrt{2+3x}+\sqrt{2-x}}{\sqrt{2+3x}+\sqrt{2-x}} \Rightarrow$$

$$\frac{(2+3x-2+x)(\sqrt{1+\cos x})}{(-\sin x)(\sqrt{2+3x}+\sqrt{2-x})} \xrightarrow{x=0} \frac{-4\sqrt{2}}{2\sqrt{2}} = -2$$ ۷

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$$\sqrt{1-\cos^2 x} = \sqrt{\sin^2 x} = |\sin x| \ (\sin 0^-) = \sin x$$

$$\lim \frac{k+\cos\sqrt{a}\,x}{kx^2} = 3 \xrightarrow[\substack{\cos x = 1-\frac{x^2}{2} \\ x\to 0}]{\text{هم‌ارزی}} \frac{k+1-\frac{ax^2}{2}}{kx^2} = 3 \qquad \underline{\begin{matrix} k+1=0 \\ k=-1 \end{matrix}}$$

$$k=-1 \rightsquigarrow \frac{-\frac{ax^2}{2}}{-x^2} = \frac{ax^2}{2x^2} = 3 \longrightarrow a=6$$ ۸

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

$$\lim_{x\to (3a)^+} \frac{2\sqrt{x-3a}+3\sqrt{x}-\sqrt{27a}}{\sqrt{x^2-9a^2}} = \frac{0}{0}$$

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$$\frac{2\sqrt{x-3a}}{\sqrt{x-3a}\sqrt{x+3a}} + \frac{3\sqrt{x}-3\sqrt{3a}}{\sqrt{x^2-9a^2}} \times \frac{\sqrt{x}+\sqrt{3a}}{\sqrt{x}+\sqrt{3a}} = \frac{2}{\sqrt{x+3a}} + \frac{3(x-3a)}{\sqrt{x-3a}\sqrt{x+3a}(\sqrt{x}+\sqrt{3a})}$$ ۹

$$\xrightarrow{x=3a} \frac{2}{\sqrt{6a}} + 3\times 0 = \frac{2}{\sqrt{6a}} = \frac{2}{\sqrt{6a}}$$

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

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$$\longrightarrow x=(-1)^+,\ [x]=-1 \longrightarrow \frac{1+k}{x^2-1} = \frac{1+k}{0^-} = -\infty \longrightarrow k>-1$$

$$\longrightarrow x<(-1)^-,\ [x]=-2 \longrightarrow \frac{1+2k}{x^2-1} = \frac{1+2k}{0^+} = -\infty \longrightarrow k<-\frac{1}{2}$$

$$\longrightarrow -1<k<-\frac{1}{2}$$ ۱۰

$$-\pi < k\pi < -\frac{\pi}{2}$$