Subject.

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آزمون تستی دوازدهم دختر A

۱) $\lim\limits_{x\to 2}\dfrac{2x-5}{x^2+ax+b}=-\infty \xrightarrow[\text{۲ در مخرج قرار دارد}]{\text{ریشه مضاعف}} \lim\limits_{x\to 2}\dfrac{2x-5}{(x-2)^2}=\dfrac{-1}{0^+}=-\infty \longrightarrow a=-4 \quad b=4 \longrightarrow a+b=0$

۲) $\lim\limits_{x\to\sqrt[3]{2^2}}\dfrac{x}{x^2+ax+b}=+\infty \xrightarrow[\text{در مخرج قرار دارد } \sqrt[3]{2^2}]{\text{ریشه مضاعف}} \lim\limits_{x\to\sqrt[3]{2^2}}\dfrac{\sqrt[3]{2^2}}{(x-\sqrt[3]{2^2})^2}=\dfrac{\sqrt[3]{2}}{0^+}=+\infty \longrightarrow a=-2\sqrt[3]{2^2} \quad b=\sqrt[3]{2^4}$

$\left[\dfrac{\sqrt[3]{2^4}}{-2\sqrt[3]{2^2}}\right]=\left[-\dfrac{\sqrt[3]{2^2}}{2}\right]=\left[-\dfrac{1/\ldots}{2}\right]=-1$

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

مخرج باید برابر صفر شود $\to \frac{1}{3}+2a=0$

$\to \frac{1}{3}=0$ غقق $\longrightarrow \boxed{a=-\frac{1}{6}} \longrightarrow \dfrac{-\frac{7}{6}}{0^+}=-\infty$ ✓ $[a]=\left[-\frac{1}{6}\right]=-1$

۴) $\lim\limits_{x\to\left(-\frac{1}{2}\right)^+}\dfrac{16x-\left[-\frac{2}{x^2}\right]}{24x+\left[\frac{3}{x^2}\right]}=\lim\limits_{x\to\left(-\frac{1}{2}\right)^+}\dfrac{16x-(-9)}{24x+12}=\lim\limits_{x\to\left(-\frac{1}{2}\right)^+}\dfrac{16x+9}{24x+12}=\lim\dfrac{1}{0^+}=\boxed{+\infty}$

۵) $\lim\limits_{x\to 2^+}\dfrac{x^2-4}{x^3-[x^3]}=\lim\limits_{x\to 2^+}\dfrac{x^2-4}{x^3-8}\xrightarrow[\frac{0}{0}]{\text{Hop}}\lim\limits_{x\to 2^+}\dfrac{2x}{3x^2}=\lim\limits_{x\to 2^+}\dfrac{4}{3\times 4}=\dfrac{1}{3}$

۶) $\lim\limits_{x\to -8}\dfrac{x^2+10x+16}{16+6\sqrt[3]{x}}=\lim\limits_{x\to -8}\dfrac{(x+8)(x+2)}{16+6\sqrt[3]{x}}\xrightarrow[\frac{0}{0}]{\text{Hop}}\lim\limits_{x\to -8}\dfrac{2x+10}{6\cdot\frac{1}{3\sqrt[3]{x^2}}}=\lim\limits_{x\to -8}\dfrac{(2x+10)(\sqrt[3]{x^2})}{2}$

$\lim\limits_{x\to -8}\dfrac{(-6)\times(4)}{2}=-12$

۷) $\lim\limits_{x\to 0^-}\dfrac{\sqrt{2+3x}-\sqrt{2-x}}{\sqrt{1-\cos x}}\times\dfrac{\text{مزدوج مخرج}}{\text{مزدوج مخرج}}\times\dfrac{\overset{\sqrt{2}}{\text{مزدوج صورت}}}{\underset{2\sqrt{2}}{\text{مزدوج صورت}}}=\lim\limits_{x\to 0^-}\dfrac{2+3x-2+x}{1-\cos x}\times\dfrac{1}{2}=\lim\limits_{x\to 0^-}\dfrac{4x}{1-\cos x}\times\dfrac{1}{2}$

$\xrightarrow[1-\cos x\,\simeq\,\frac{x^2}{2},\ x\to 0]{\text{هم ارزی}}\lim\limits_{x\to 0^-}\dfrac{2x}{\frac{x^2}{2}}=\lim\limits_{x\to 0^-}\dfrac{4}{x}=\dfrac{4}{0^-}=-\infty$

۸) $\lim\limits_{x\to 0}\dfrac{k+\cos(\sqrt{a}x)}{kx^2}=3 \xrightarrow[1-\cos x\to\frac{x^2}{2}]{\text{هم ارزی ازینی}} \lim\limits_{x\to 0}\dfrac{k+1-ax^2}{kx^2}=3$

حد $\frac{0}{0}$ می‌باشد $\longrightarrow k+1=0 \longrightarrow \underline{k=-1} \xrightarrow{\text{جایگذاری}} \lim\limits_{x\to 0}\dfrac{-ax^2}{-x^2}=3 \longrightarrow \underline{a=3},\ \dfrac{a}{k}=-3$

۹) $\cancel{\lim\limits_{x\to 3a^+}\dfrac{2\sqrt{x-3a}+3\sqrt{x}-\sqrt{27a}}{\sqrt{9x^2-9a^2}}\xrightarrow[\frac{0}{0}]{\text{Hop}}\lim\dfrac{2\left(\frac{1}{2\sqrt{x-3a}}\right)+3\left(\frac{1}{2\sqrt{x}}\right)}{\frac{2x}{2\sqrt{x^2-9a^2}}}}$

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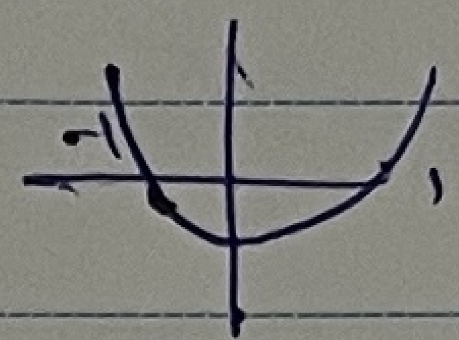
$$\lim_{x\to 3a} \frac{2\sqrt{x-3a}+3\sqrt{x}-\sqrt{27a}}{\sqrt{x^2-9a^2}} \xrightarrow{hop} \lim_{x\to 3a} \frac{\frac{2}{2\sqrt{x-3a}}+\frac{3}{2\sqrt{x}}}{\frac{2x}{2\sqrt{x^2-9a^2}}} = \lim_{x\to 3a^+} \frac{\sqrt{x^2-9a^2}\left(\frac{1}{\sqrt{x-3a}}+\frac{3}{2\sqrt{x}}\right)}{x}$$

$\lim$



$$10)\quad \lim_{x\to -1} \frac{1-k[x]}{x^2-1} = -\infty$$

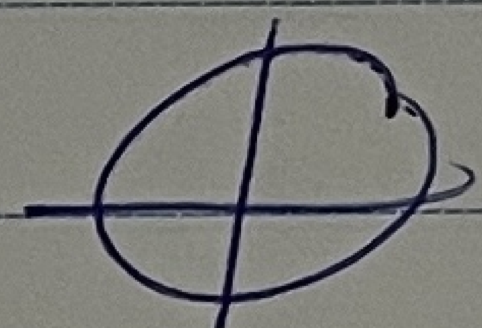
-1^+: $\frac{1+k}{x^2-1} = \frac{1+k}{0^-}$ $\quad 0<1+k \quad -1<k$

-1^-: $\frac{1+2k}{x^2-1} = \frac{1+2k}{0^+}$ $\quad 1+2k<0 \quad k<-\frac{1}{2}$

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

$\longrightarrow k=-\frac{3}{4}$ $\quad \left(-\frac{3}{4}\pi \quad \cos\frac{3a}{4}\right)$

$-\frac{3a}{4}<0 \quad \cos -\frac{3a}{4}<0$



ناحیه سوم