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نام و نام خانوادگی .... [illegible] .... پاسخنامه تشریحی تکلیف شماره ...14... کلاس ...دوازدهم تجربی A...

۱	$f(x) = 2 + 2\left[\frac{2-x}{2}\right] + a\left[\frac{x+2}{3}\right] \longrightarrow \lim_{x \to -2} 2 + 2\left[\frac{-x}{2}\right] + a\left[\frac{x+2}{3}\right]$ $\left[1 - \frac{x}{2}\right] = 1 + \left[-\frac{x}{2}\right]$ $-2^{+} \longrightarrow 2 + 2\left[\frac{-2^{+}}{2}\right] + a\left[\frac{-2^{+}+2}{3}\right] = 2 + 2[1] + a[0^{+}] = 2 + 4 + 0 = 4$ $-2^{-} \longrightarrow 2 + 2 + 1 - a = 5 - a$ $\quad 5 - a = 4 \longrightarrow a = 1 \longrightarrow \left[\frac{a}{3}\right] = \left[\frac{1}{3}\right] = 0$ ✓ ۲
۲	$\lim_{x \to (\frac{\pi}{6})^{-}} [2\sin x - 1]$ $\sin(\frac{\pi}{6}) = \frac{1}{2}^{-} \longrightarrow [2\sin x - 1] = [1^{-} - 1] = [0^{-}] = -1$ ✓ ۲
۳	$\lim_{x \to -\frac{1}{2}} [8x^3 - x] = 8x^3 - x = 8\left(-\frac{1}{2}\right)^3 - \left(-\frac{1}{2}\right) = 8\left(-\frac{1}{8}\right) + \frac{1}{2} = -1 + \frac{1}{2} = -\frac{1}{2} \notin \mathbb{Z}$ $\longrightarrow \left[-\frac{1}{2}\right] = -1$ ✓ ۲
۴	$\lim_{x \to -\frac{1}{2}} \dfrac{6x - 5 + [\frac{3}{x^2}]}{16x - [-\frac{2}{x^2}]}$ $\quad x = -\frac{1}{2} \longrightarrow \dfrac{6(-\frac{1}{2}) + 6}{16(-\frac{1}{2}) + 8} = \frac{1}{0^{-}} = -\infty$ ✓ $x < -\frac{1}{2} \longrightarrow x^2 > \frac{1}{4} \longrightarrow \frac{3}{x^2} < 12 \longrightarrow \left[\frac{3}{x^2}\right] = 11$ $\frac{-2}{x^2} > -8 \longrightarrow \left[\frac{-2}{x^2}\right] = -8$ $\lim \dfrac{6x - 5 + 11}{16x + 8} = \dfrac{6x + 6}{16x + 8}$ ۲
۵	$\lim_{x \to 1^{+}} \dfrac{\sin^2 \pi x}{[x] + \cos \pi x} \longrightarrow \lim \dfrac{\sin^2 \pi x}{\cos \pi x + 1} = \frac{0}{0}$ $\xrightarrow{\text{رفع ابهام}}$ $\dfrac{1 - \cos^2 \pi x}{\cos \pi x + 1} = \dfrac{(1 - \cos \pi x)(1 + \cos \pi x)}{1 + \cos \pi x}$ $[1^{+}] = 1$ $\lim_{x \to 1^{+}} 1 - \cos \pi x = 2$ ✓ ۲

$\lim_{x\to -1} \frac{\sqrt{2x+3}-\sqrt{3x+4}}{1+\sqrt[3]{x}} = \frac{1-1}{1+(-1)} = \frac{0}{0}$ رفع ابهام

$\frac{\sqrt{2x+3}-\sqrt{3x+4}}{1+\sqrt[3]{x}} \times \frac{\sqrt{2x+3}+\sqrt{3x+4}}{\sqrt{2x+3}+\sqrt{3x+4}} \times \frac{\sqrt[3]{x^2}-\sqrt[3]{x}+1}{\sqrt[3]{x^2}-\sqrt[3]{x}+1} = \frac{2x+3-3x-4}{1+x} \times \frac{3}{2} = -\frac{3}{2}$ ✓ ۲ ۶

$\lim \frac{2x-7\sqrt{x}+5}{2x-\sqrt{3x+1}} = \frac{2-7+5}{2-2} = \frac{0}{0}$ رفع ابهام $\to \frac{2x-7\sqrt{x}+5}{2x-\sqrt{3x+1}} \times \frac{2x+\sqrt{3x+1}}{2x+\sqrt{3x+1}} =$ ۲

$\frac{4(2x-7\sqrt{x}+5)}{4x^2-3x-1} = \frac{2(\sqrt{x}-1)(\sqrt{x}-\frac{5}{2})\times 4}{4(x-1)(x+\frac{1}{4})} \xrightarrow{x=1} \frac{2(1-\frac{5}{2})\times 4}{4(2)(1+\frac{1}{4})} = -\frac{6}{5}$ ✓ ۷

$-\frac{6}{5}$

$\lim \frac{a+\sqrt{bx+c}}{x} = \frac{1}{4} \to \lim \frac{a+\sqrt{c}}{0} = \frac{1}{4} \xrightarrow{\frac{0}{0}} a+\sqrt{c}=0 \to \sqrt{c}=-a \to c=a^2$ ۲

hop $\frac{\frac{b}{2\sqrt{bx+c}}}{1} = \frac{1}{4} \xrightarrow{x=0} \frac{b}{2\sqrt{c}} = \frac{1}{4} \to \sqrt{c}=2b, \ \sqrt{c}=-a \to 2b=-a, \ b=-\frac{a}{2}$

$\frac{ab}{c} = \frac{a(-\frac{a}{2})}{a^2} = -\frac{1}{2}$ ✓ ۸

$x\to(-2\pi)^+ \to \frac{4+k\left[\frac{(-2\pi)^+}{\pi}\right]}{\sin(-2\pi)^+} = \frac{4-2k}{0^+} = +\infty \to 4-2k>0 \to 4>2k \to k<2$

$[-k]=-2$ ✓ $\leftarrow -\frac{4}{3}>-k>-2 \leftarrow \frac{4}{3}<k<2$ ۲ ۹

$x\to(-2\pi)^- \to \frac{4+k\left[\frac{(-2\pi)^-}{\pi}\right]}{\sin(-2\pi)^-} = \frac{4-3k}{0^-} = +\infty \to 4-3k<0 \to 4<3k \to k>\frac{4}{3}$

$\lim \frac{b\sqrt{2+2\sqrt[3]{x}}-2b}{ax-b}$ $\quad \frac{\frac{1}{3}b^2x^{-\frac{2}{3}}}{-4ab^2} = \frac{x^{-\frac{2}{3}}}{4} = \frac{8^{-\frac{2}{3}}}{4} = \frac{1}{16}$

$2b-2b=0$

جایگذاری ± 0

⇓

مخرج صفر

$a=b$

$\frac{b\sqrt{2+2\sqrt[3]{x}}-2b}{ax-b} \times \frac{b\sqrt{2+2\sqrt[3]{x}}+2b}{b\sqrt{2+2\sqrt[3]{x}}+2b} = \frac{2b^2+2b^2x^{\frac{1}{3}}-4b^2}{4abx-4b^2} \xrightarrow{hop}$ ۰ ۱۰

سوال ۱۰

$$1a-b=0 \rightarrow b=1a$$

$$\lim_{x\to 1} \frac{1a\left(\sqrt{2+\sqrt[3]{2x}}-2\right)}{ax-1a} = \frac{1a\left(\sqrt{2+\sqrt[3]{2x}}-2\right)}{ax-1a} \times \frac{\sqrt{2+\sqrt[3]{2x}}+2}{\sqrt{2+\sqrt[3]{2x}}+2} =$$

$$\lim_{x\to 1} \frac{1a\left(\sqrt[3]{2x}-2\right)}{a(x-1)\times 4} \rightarrow \lim_{x\to 1} \frac{2\left(\sqrt[3]{2x}-2\right)}{\left(\sqrt[3]{2x}-2\right)\left(\sqrt[3]{(2x)^2}+4+2\sqrt[3]{2x}\right)} = \frac{2}{12} = \frac{1}{6}$$