نام و نام خانوادگی ...دانیال ...... پاسخنامه تشریحی تکلیف شماره ...۱۹... کلاس ...دوازدهم A...

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$f(x) = 2\left[\frac{2-x}{2}\right] + a\left[\frac{x+2}{3}\right]$

$\lim_{x \to -2}$: $(-2)^+ \to 2\left[\frac{4^-}{2}\right] + a\left[\frac{0^+}{3}\right] = 2$; $(-2)^- \to 2\left[\frac{4^+}{2}\right] + a\left[\frac{0^-}{3}\right] = 4 - a$

$4 - a = 2 \to \boxed{a = 2}$

$\left[\frac{a}{3}\right] = \left[\frac{2}{3}\right] = \boxed{0}$

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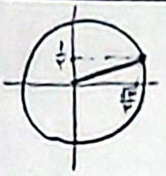

$\lim_{x \to (\frac{\pi}{6})^-} [2\sin x - 1] = [2(\tfrac{1}{2})^- - 1] = [1^- - 1] = [0^-] = \boxed{-1}$

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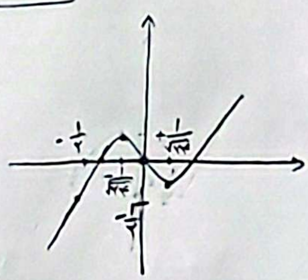
$\lim_{x \to -\frac{1}{2}} [8x^3 - x] = \begin{cases} (-\frac{1}{2})^+ : [(-\frac{1}{2})^+] = -1 \\ (-\frac{1}{2})^- : [(-\frac{1}{2})^-] = -1 \end{cases}$

حد $= -1$

$y = 8x^3 - x$

$y' = 24x^2 - 1$

	$-\frac{1}{\sqrt{24}}$		$+\frac{1}{\sqrt{24}}$	
$+$	0	$-$	0	$+$
↗		↘		↗



۴

$\lim_{x \to (-\frac{1}{2})^-} \frac{10x - 5 + \left[\frac{3}{x^2}\right]}{16x - \left[-\frac{2}{x^2}\right]} = \frac{10x - 5 + 11}{16x - (-8)} = \frac{10x + 6}{16x + 8} = \frac{-5 + 6}{(-8)^- + 8} = \frac{1}{0^-} = \boxed{-\infty}$

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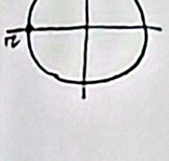
$\lim_{x \to 1^+} \frac{\sin^2 \pi x}{[x] + \cos \pi x} = \frac{\sin^2 \pi x}{1 + \cos \pi x} = \frac{1 - \cos^2 \pi x}{1 + \cos \pi x} = 1 - \cos \pi x = 1 - \cos \pi^+ = 1 - 1^- \simeq \boxed{0}$



۶

$$\lim_{x\to -1} \frac{\sqrt{2x+3}-\sqrt{3x+4}}{1+\sqrt[3]{x}} \times \frac{\sqrt{2x+3}+\sqrt{3x+4}}{\sqrt{2x+3}+\sqrt{3x+4}} \times \frac{1-\sqrt[3]{x}+\sqrt[3]{x^2}}{1-\sqrt[3]{x}+\sqrt[3]{x^2}}$$

$$= \frac{-(x+1)}{1+x} \times \frac{1-\sqrt[3]{x}+\sqrt[3]{x^2}}{\sqrt{2x+3}+\sqrt{3x+4}} = -1 \times \frac{1}{2} = \boxed{-\frac{1}{2}}$$

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$$\lim_{x\to 1} \frac{2x-\sqrt{\sqrt{x}+a}}{2x-\sqrt{3x+1}} = \frac{0}{0} \xrightarrow{\text{h.o.p}} \frac{2-\frac{1}{2\sqrt{x}}}{2-\frac{3}{2\sqrt{3x+1}}} = \frac{2-\frac{1}{2}}{2-\frac{3}{4}} = \frac{\frac{3}{2}}{\frac{5}{4}} = \boxed{-\frac{6}{5}}$$

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$$\lim_{x\to 0} \frac{a+\sqrt{bx+c}}{x} = \frac{0}{0} = \frac{1}{4} \xrightarrow{\text{h.o.p}} \frac{\frac{b}{2\sqrt{bx+c}}}{1} = \frac{b}{2\sqrt{c}} = \frac{1}{4} \to b = \frac{\sqrt{c}}{2}$$

$$a+\sqrt{bx+c} \xrightarrow{x=0} a+\sqrt{c} = 0 \to a = -\sqrt{c}$$

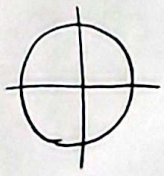
$$\frac{ab}{c} = \frac{-\sqrt{c} \times \frac{\sqrt{c}}{2}}{c} = \boxed{-\frac{1}{2}}$$

۹

$$\lim_{x\to -2\pi} \frac{4+k\left[\frac{x}{2\pi}\right]}{\sin x} \quad \left[\frac{x}{2\pi}\right] \to -2$$

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

$$(-2\pi)^- \to \frac{4-3k}{\sin(-2\pi)^-} = \frac{4-3k}{0^-} = +\infty \to 4-3k < 0 \to \frac{4}{3} < k$$



$$\frac{4}{3} < k < 2 \to -\frac{4}{3} > -k > -2 \to \boxed{[-k] = -2}$$

۱۰

$$\lim_{x\to 8} \frac{b\sqrt{2+\sqrt[3]{x}}-2b}{ax-b} = \frac{2b-2b}{8a-b} = \frac{0}{0} = k \in \mathbb{R}$$

$$8a = b$$

$$\xrightarrow{\text{h.o.p}} \frac{b \times \frac{1}{3\sqrt[3]{x^2}}}{a \times \frac{1}{2\sqrt{2+\sqrt[3]{x}}}} = \frac{b \times \frac{1}{3\times 4}}{a \times \frac{1}{2\times 2}} = \frac{b}{a} \times \frac{1}{6} = 8 \times \frac{1}{48} = \boxed{\frac{1}{6}}$$