۲۰ آفرین به شما

تکلیف شماره ۱۸ — دوازدهم تجربی B — مهرنیا ریحی

1

$\lim_{x\to 2^+} \frac{2x+5}{x+1} = \frac{9}{3} = 3$ $\quad \lim_{x\to 2^-} \frac{2x+5}{x+1} = \frac{9}{3} = 3$ $\quad \lim_{x\to 0} \frac{4x+7}{[x^2]}$

$\lim_{x\to 2} \frac{2x+5}{x+1}$ → $\lim_{x\to 2^+} \frac{2x+5}{x+1} = \frac{9}{3} = 3$; $\lim_{x\to 2^-} \frac{2x+5}{x+1} = \frac{9}{3} = 3$ } $\lim \frac{2x+5}{x+1} = 3$

ص

$\lim_{x\to 0} \frac{4x+7}{[x^2]}$ → $\lim_{x\to 0^+} \frac{4x+7}{[x^2]} = \frac{4x+7}{0}$ ت ن

$\lim_{x\to 0^-} \frac{4x+7}{[x^2]} = \frac{4x+7}{[(0^-)^2]} = \frac{4x+7}{[0^+]} =$ ت ن

2

$\lim_{x\to 3^-} 4[x]-2 = 4(2)-2 = 6$ $\quad \lim_{x\to 3^-} [4x-2] = \lim_{x\to 3^-} [12^- - 2] = \lim_{x\to 3^-} [10^-] = 9$

$\left[\lim_{x\to 3^-} 4x-2\right] = 10$ $\quad \left[\lim_{x\to 3^+} 4x-2\right] = 10$

ص

3

$\lim_{x\to 3^-} \frac{3[x]+1}{2} = \frac{3(2)+1}{2} = \frac{7}{2} = 3.5$ $\quad \lim_{x\to 3^-} \left[\frac{3x+1}{2}\right] = \lim_{x\to 3^-} \left[\frac{10^-}{2}\right] = 4$

$\left[\lim_{x\to 3^-} \frac{3x+1}{2}\right] = \left[\lim_{x\to 3^-} \frac{10}{2}\right] = 5$ $\quad \left[\lim_{x\to 3^+} \frac{3x+1}{2}\right] = 5$

ص

4

$\lim_{x\to 1} \frac{x-5}{x^2-6x+5}$ → $\lim_{x\to 1^-} \frac{x-5}{(x-5)(x-1)} = \lim_{x\to 1^-} \frac{1}{x-1} = -\infty$; $\lim_{x\to 1^+} \frac{x-5}{(x-5)(x-1)} = \lim_{x\to 1^+} \frac{1}{x-1} = +\infty$

ص

$\lim_{x\to 3} \frac{x-4}{(x-3)^2} = \frac{-1}{0^+} = -\infty$

5

$\lim_{x\to -3} [-3x]-[5x]$ → $\lim_{x\to -3^+} [-3x]-[5x] = [9^-]-[-15^+] = 8+15 = 23$; $\lim_{x\to -3^-} [-3x]+[5x] = [9^+]-[-15^-] = 9+16 = 25$

$\lim_{x\to (\frac{-1}{2})^-} \left[\frac{-1}{x^4}\right] = -16$ $\left(x < \frac{-1}{2} \quad x^4 > \frac{1}{16} \quad \frac{1}{x^4} < 16 \quad \frac{-1}{x^4} > -16 \right)$

ص

$\lim_{x\to1}[4x^3-3x^4+3]=3$ $\qquad$ $\lim_{x\to0}[4x^3-3x^4+3]$ 6

$f'(x)=12x^2-12x^3=-12x^2(x-1)$ $\qquad$ $\lim_{x\to0^+}[3^+]=3$ $\qquad$ $\lim_{x\to0^-}[3^-]=2$

$\lim_{x\to2}\frac{|x^3-8|}{x^2-4}$ 7

حد ندارد

$\lim_{x\to2^+}\frac{(\cancel{x-2})(x^2+2x+4)}{(x+2)(\cancel{x-2})}=\frac{x^2+2x+4}{x+2}=\frac{12}{4}=3$

$\lim_{x\to2^-}\frac{-(\cancel{x-2})(x^2+2x+4)}{(x+2)(\cancel{x-2})}=\frac{-(x^2+2x+4)}{(x+2)}=\frac{-12}{4}=-3$

$\lim_{x\to\pi}\frac{|\sin x|}{\sin 2x}$

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$\lim_{x\to\pi^+}\frac{-\sin x}{2\sin x\cos x}=\frac{-1}{2\cos x}=\frac{-1}{2\cos\pi}=\frac{-1}{2}$

$\lim_{x\to\pi^-}\frac{\sin x}{2\sin x\cos x}=\frac{1}{2\cos\pi}=\frac{1}{2}$

$\lim_{x\to\frac{3\pi}{2}}\sqrt{\cos x}$ 8

$\lim_{x\to\frac{3\pi}{2}^+}\sqrt{\cos x}=\lim\sqrt{0}=0$ $\qquad$ ندارد

$\lim_{x\to\frac{3\pi}{2}^-}\sqrt{\cos x}=$ ت.ن

$\lim_{x\to0}\sqrt{x-2\sqrt{x}}$

$\lim_{x\to0^+}\sqrt{x-2\sqrt{x}}=$ ت.ن $\qquad$ $0<x<1\to\sqrt{x}>x$ $\quad$ $x-2\sqrt{x}<0$

$\lim_{x\to0^-}\sqrt{x-2\sqrt{x}}=$ ت.ن

$\lim_{x\to0^+}\frac{(-1)^{[\sin x]}}{x^3-x^2}=\frac{(-1)^{[0^+]}}{x^2(x-1)}=\frac{(-1)^0}{x^2(x-1)}=\frac{1}{x^2(x-1)}=-\infty$ 9

$\lim_{x\to2}\frac{x^2-[x^2]}{x-[x]}$

حد ندارد

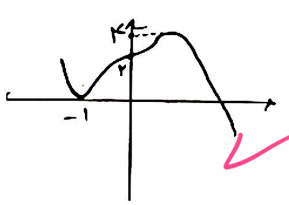
$\lim_{x\to2^+}\frac{x^2-[x^2]}{x-[x]}=\frac{x^2-4}{x-2}=x+2=4$

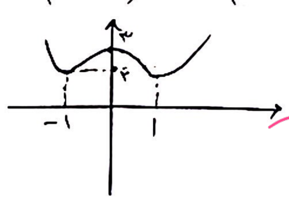
$\lim_{x\to2^-}\frac{x^2-[x^2]}{x-[x]}=\frac{x^2-3}{x-1}=\frac{4-3}{2-1}=1$

$y=5x^3-3x^5+2\xrightarrow{\text{مشتق}}15x^2-15x^4=-15x^2(x^2-1)=-15x^2(x-1)(x+1)$ 10

	-1		0^*		1	
$-$		$+$		$+$		$-$

	-1		0		1	
$-$		$+$		$-$		$+$





$y=x^4-2x^2+3\longrightarrow f'(x)=4x^3-4x=4x(x^2-1)=4x(x-1)(x+1)$