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«به نام خدا» «فاطمه متقی - ۲۹»

۱) الف) $\lim_{x\to 2^+} 4x-3 = 8-3 = 5$ ب) $\lim_{x\to 2^-} 4x-3 = 8-3 = 5$

۲) الف) $\lim_{x\to 2^+} 4[x]-3 = 8-3 = 5$ ب) $\lim_{x\to 2^-} 4[x]-3 = 4-3 = 1$

۳) الف) $\lim_{x\to 2^+} [4x^{5^+}-3] = 5$ ب) $\lim_{x\to 2^-} [4x^{5^-}-3] = 4$

۴) الف) $[\lim_{x\to 2^+} 4x-3] = 5$ ب) $[\lim_{x\to 2^-} 4x-3] = 5$

۵) الف) $\lim_{x\to 3} \frac{4x-3}{x-3}$ $\xrightarrow{3^+}$ $\frac{9}{0^+} = +\infty$

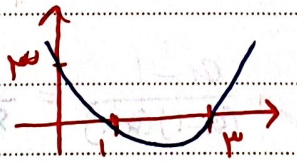
$\xrightarrow{3^-}$ $\frac{9}{0^-} = -\infty$

ب) $\lim_{x\to 3} \frac{4x-3}{(x-3)^2}$ $\frac{\text{درهم}}{\text{دوتا فه}}$ $\frac{9}{0^+} \to +\infty$

لم به ناظر توان دو، حاصل هر دو حالت برابر است.

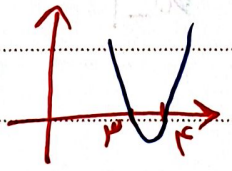
۶) الف) $\lim_{x\to 3} \frac{4x-3}{\sqrt{x-3}}$ $\xrightarrow{3^+}$ $\frac{9}{\sqrt{0^+}} = +\infty$

$\xrightarrow{3^-}$ $\frac{9}{\sqrt{0^-}} =$ ت ن

ب) $\lim_{x\to 3} \frac{4x-3}{\sqrt{x^2-4x+3}}$ $\Rightarrow$ 

3^+ $\frac{9}{\sqrt{0^+}} = +\infty$

3^- $\frac{9}{\sqrt{0^-}} =$ ت ن

۷) الف) $\lim_{x\to 3} \frac{4x-3}{x^2-\sqrt{x}+12}$ 

3^+ $\frac{9}{0^-} = -\infty$

3^- $\frac{9}{0^+} = +\infty$

ب) $\lim_{x\to 3} \frac{4x-3}{[x-3]}$ 3^+ $\frac{9}{[0^+]} =$ ت ن

3^- $\frac{9}{[0^-]} = -9$

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الف) $\lim_{x\to 3} [3x] + [-2x]$

$3^+ \to [9^+] + [-6^-] = 2$

$3^- \to [9^-] + [-6^+] = 2$

ب) $\lim_{x\to -6} [-5x] + [2x]$

$-6^+ \to [33^-] + [-12^+] = 11$

$-6^- \to [33^+] + [-12^-] = 11$

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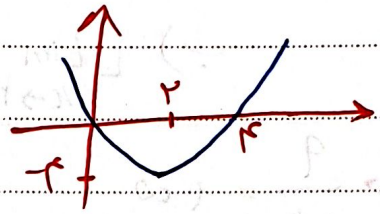
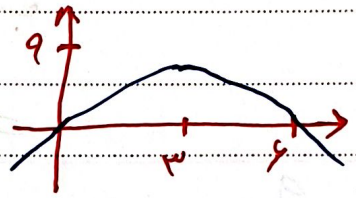
الف) $\lim_{x\to 2} [x^2 - 4x]$



$\lim_{x\to 2} [x^2 - 4x] = -4$

ب) $\lim_{x\to 3} [9x - x^2]$ $x(9-x)$



$\lim_{x\to 3} [9x - x^2] = 8$

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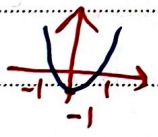
الف) $\lim_{x\to 2} \frac{|x-2|}{x^2-3x+2} = \frac{0}{0}$ مبهم

$\frac{|x-2|}{(x-1)(x-2)}$

$2^+ \to \frac{1}{x-1} = 1$

$2^- \to \frac{-1}{x-1} = -1$

ب) $\lim_{x\to 1} \frac{x-[x]}{x^2-1} = \frac{0}{0}$ مبهم



$1^+ \to \frac{x-1}{(x-1)(x+1)} = \frac{1}{x+1} = \frac{1}{2}$

$1^- \to \frac{x}{x^2-1} = \frac{1}{0^-} = -\infty$