Review

① $\lim_{x\to 5} \frac{\sqrt{x-1}-2}{x-5}$

② $\lim_{x\to 2^-} \frac{x}{x-2}$

③ $\lim_{x\to 4^+} \frac{-x^2+x}{x^2-2x-8}$

④ $\lim_{x\to 2} \frac{x^2-3x}{x+5}$

⑤ $\lim_{x\to 0} \frac{\frac{1}{5-x}-\frac{1}{5}}{x}$

⑥ $\lim_{x\to \pi} \sin x$

⑦ $\lim_{x\to 5^-} e$

⑧ $\lim_{x\to -6^-} \frac{x^2+4x-12}{x^2-36}$

Sep 16-9:33 AM

① $\lim_{x\to 5} \frac{(\sqrt{x-1}-2)}{(x-5)} \cdot \frac{(\sqrt{x-1}+2)}{(\sqrt{x-1}+2)}$

$\frac{x-1-4}{(x-5)(\sqrt{x-1}+2)}$

$\frac{\cancel{(x-5)}}{\cancel{(x-5)}(\sqrt{x-1}+2)}$

$\frac{1}{\sqrt{4}+2} \to 1/4$

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② $\lim_{x\to 2^-} \frac{x}{x-2}$ VA: $x=2$

$\frac{+}{-}$ $\boxed{-\infty}$

③ $\lim_{x\to 4^+} \frac{-x^2+x}{x^2-2x-8} \to \frac{-x(x-1)}{(x-4)(x+2)}$

$\frac{(-)(+)}{(+)(+)} \to -\infty$

④ $\lim_{x\to 2} \frac{x^2-3x}{x+5}$

$\frac{2^2-3(2)}{2+5} \to \frac{4-6}{7} \to -2/7$

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⑤ $\lim_{x\to 0} \frac{\left(\frac{1}{5-x}\right)-\left(\frac{1}{5}\right)}{x} \to \frac{\frac{5-(5-x)}{5(5-x)}}{x}$

$\frac{1}{5-x} - \frac{1}{5}$

$\frac{5}{5(5-x)} - \frac{(5-x)}{5(5-x)}$

$\frac{\cancel{5-5+x}}{5(5-x)} \cdot \frac{1}{\cancel{x}}$

$\frac{1}{5(5-0)}$

$1/25$

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⑥ $\lim_{x\to \pi} \sin x$ 0

π $(-1,0)$

⑦ $\lim_{x\to 5^-} e$ e

⑧ $\lim_{x\to -6^-} \frac{x^2+4x-12}{x^2-36} \to \frac{(x+6)(x-2)}{(x+6)(x-6)}$

$\frac{-6-2}{-6-6} \to \frac{-8}{-12}$

$2/3$

Sep 16-9:57 AM

⑨ $\lim_{x\to 1} \frac{x^3-1}{x^2-1}$

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

$\frac{(1)^2+1+1}{1+1} \to 3/2$

Sep 16-10:03 AM