Note The following problems include the phrase "use proper mathematical grammar." Please read the following handout for information on what I mean by this phrase (this is also linked on the website, under "Handouts"):
`https://npflueger.github.io/teaching/111-23fall/handouts/grammar.pdf`

1. Compute the following limits. Be clear about whether the answer is a numerical value, $+\infty$, $-\infty$, or DNE. Show your steps clearly and use proper mathematical grammar.

   a) $\lim_{x\to 4} \dfrac{x^2-4x}{x^2-3x-4}$

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

   c) $\lim_{x\to 5} \dfrac{x^2-5x+6}{x-5}$

   d) $\lim_{h\to 0} \dfrac{(-3-h)^2-9}{h}$

   e) $\lim_{h\to 0} \dfrac{(2+h)^3-8}{h}$

   f) $\lim_{x\to -2} \dfrac{x+2}{x^3+8}$

   g) $\lim_{t\to 0} \dfrac{\sqrt{1+t}-\sqrt{1-t}}{t}$

   h) $\lim_{h\to 0} \dfrac{\dfrac{3}{5+h}-\dfrac{3}{5}}{h^2+2h}$

2. Compute the following one-sided limits. Be clear about whether the answer is a numerical value, $+\infty$, $-\infty$, or DNE. Show your steps clearly and use proper mathematical grammar.

   a) $\lim_{x\to 6^-} \dfrac{2x-12}{|x-6|}$

   b) $\lim_{x\to 0^+} \left(\dfrac{1}{x}-\dfrac{1}{|x|}\right)$

   c) $\lim_{x\to 0^-} \left(\dfrac{1}{x}-\dfrac{1}{|x|}\right)$

3. Each of the following limits exists. Compute their values. Show your steps clearly and use proper mathematical grammar.

   a) $\lim_{u\to 0} \dfrac{\sqrt{9+u}-3}{u}$

   b) $\lim_{x\to -4} \dfrac{\dfrac{1}{x}+\dfrac{1}{4}}{x+4}$

   c) $\lim_{t\to 0} \left(\dfrac{1}{t}-\dfrac{1}{t^2+t}\right)$