1. [15 points] The following figure shows the graph of $y = f(x)$ for some function $f$. The dotted line signifies a vertical asymptote.

a. [12 points] Using the graph, give the values of each of the following quantities if they exist. Choose your answer in each part from the numbers 0, 1, 2, 3 or the words “Does not exist.” Answers may be used more than once—or not at all.

   i) $f(1) = \text{Does not exist.}$
   
   ii) $f(2) = 1$
   
   iii) $f(3) = \text{Does not exist.}$
   
   iv) $f'(-1) = 0.$
   
   v) $f'(1) = \text{Does not exist.}$
   
   vi) $f'(2) = \text{Does not exist.}$
   
   vii) $\lim_{x \to +\infty} f(x) = 0.$
   
   viii) $\lim_{x \to 3} f(x) = \text{Does not exist.}$
   
   ix) $\lim_{x \to 2} f(x) = 1.$
   
   x) $\lim_{x \to -1} f(x) = 3.$
   
   xi) $\lim_{x \to -1} f(x) = 1.$
   
   xii) $\lim_{x \to -\infty} f(x) = \text{Does not exist.}$

b. [3 points] Still looking at the graph, is $f$ continuous at the following $x$ values? (Yes or No)

   i) $x = 1, \quad \text{No.}$
   
   ii) $x = 2, \quad \text{Yes.}$
   
   iii) $x = 3, \quad \text{No.}$