1. Evaluate the limit
\[ \lim_{t \to 2} \frac{t^2 + t - 6}{t - 2} \]
Discuss the validity of the statement
\[ \frac{t^2 + t - 6}{t - 2} = t + 3 \]

2. Sketch the graph of a function \( f \) that satisfies these conditions: \( \lim_{x \to 0} f(x) = 1 \), \( \lim_{x \to 2^-} f(x) = \infty \), \( \lim_{x \to 2^+} f(x) = -1 \), \( f(1) = -4 \). What are the possible values of \( f(2) \)?

3. For the function \( f \) whose graph is given, state the value of each quantity, if it exists. If it does not, explain why.
(a) \( \lim_{x \to 1} f(x) \)

(b) \( \lim_{x \to 3^-} f(x) \)

(c) \( \lim_{x \to 3^+} f(x) \)

(d) \( \lim_{x \to 3} f(x) \)

(e) \( f(3) \)

4. Use tables to evaluate the following limits. If you know how to solve the limit a different way, do this to check your answer. (Tables can sometimes give you the wrong answer! Discuss why this is the case with your team.)

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

(b) \( \lim_{x \to 2^+} \frac{x^2 - 2x - 8}{x^2 - 5x + 6} \)

(c) \( \lim_{x \to 3^-} \frac{\ln(e^x)}{x - 3} \)
5. Evaluate the limits without using tables and explain your reasoning.

(a) \( \lim_{x \to 2} ax^2 + bx + c + \log_2(x) \)

(b) \( \lim_{x \to 5} \frac{x^2 - 16}{x^2 - x - 12} \)

(c) \( \lim_{x \to 4} \frac{x^2 - 16}{x^2 - x - 12} \)

(d) \( \lim_{x \to 0} \left( \frac{1}{3x} - \frac{4}{x^2 + 12x} \right) \)
Review

1. Sketch the function \( f(x) = \log_2(x + 4) \).
   
   (a) Does this function intersect \( g(x) = 2^x \)? How do you know?
   
   (b) Find \( f^{-1}(x) \).
   
   (c) Does \( f^{-1}(x) \) intersect \( g(x) \)? Does it intersect \( e^x \)? How do you know?

2. True or false?
   
   - \( \ln(ab) = \ln(a) + \ln(b) \)
   - \( \ln(ab) = \ln(a) \ln(b) \)
   - \( \ln(a) - \ln(b) = \frac{\ln(a)}{\ln(b)} \)
   - \( \frac{\ln(a)}{\ln(b)} = \ln\left(\frac{a}{b}\right) \)
   - \( \ln(a) - \ln(b) = \ln\left(\frac{a}{b}\right) \)
   - \( \ln(e) = 1 \)
   - \( \ln(0) = 1 \)
   - \( \ln(1) = 0 \)
   - \( \ln(x^a) = a \ln(x) \)
   - \( \ln(5x^a) = 5a \ln(x) \)
   - \( \ln(5x^a) = a \ln(x) \)
   - \( \ln(e^x) = x \)
   - \( \ln(5e^x) = 5x \)
   - \( e^{\ln(x)} = x \)

3. Determine all values of \( x \) which satisfy the equation \( \ln(x^7) = 35 \).