Find the following limits using only algebraic techniques.

1. \( \lim_\limits{x \to 2} \frac{x^2 - x - 2}{x^2 + 5x - 14} \)

   **Solution:**
   \[
   \lim_\limits{x \to 2} \frac{x^2 - x - 2}{x^2 + 5x - 14} = \lim_\limits{x \to 2} \frac{(x + 1)(x - 2)}{(x + 7)(x - 2)}
   \]
   \[
   = \lim_\limits{x \to 2} \frac{x + 1}{x + 7}
   \]
   \[
   = \frac{3}{9}
   \]
   \[
   = \frac{1}{3}
   \]

2. \( \lim_\limits{x \to -\infty} \frac{2x^3 + 7x^2 - x - 13}{4x^5 + x^4} \)

   **Solution:**
   \[
   \lim_\limits{x \to -\infty} \frac{2x^3 + 7x^2 - x - 13}{4x^5 + x^4} = \lim_\limits{x \to -\infty} \frac{\frac{2}{x^2} + \frac{7}{x^3} - \frac{1}{x^4} - \frac{13}{x^5}}{4 + \frac{1}{x^3}}
   \]
   \[
   = 0
   \]
   \[
   = 0
   \]

3. \( \lim_\limits{x \to \infty} \frac{3x^5 - 4x^4 + 2x^3 + 17x^2 - 25x - 5}{-4x^5 + x^4 + x^3 + x^2 - 256.7x + \pi} \)

   **Solution:**
   \[
   \lim_\limits{x \to \infty} \frac{3x^5 - 4x^4 + 2x^3 + 17x^2 - 25x - 5}{-4x^5 + x^4 + x^3 + x^2 - 256.7x + \pi} = \lim_\limits{x \to \infty} \frac{\frac{3}{x^5} - \frac{4}{x^4} + \frac{2}{x^5} + \frac{17}{x^4} - \frac{25}{x^3} - \frac{5}{x^2}}{-4 + \frac{1}{x} + \frac{1}{x^2} + \frac{1}{x^3} - \frac{256.7}{x^4} + \frac{\pi}{x^5}}
   \]
   \[
   = -\frac{3}{4}
   \]