

**Section 2.3: Challenge Problems**

1. 
$$\lim_{x \rightarrow 1} \frac{x^3 - 1}{x^2 - 1}$$

2. 
$$\lim_{x \rightarrow -2} \frac{3x^2 + 2x - 8}{5x^2 + 17x + 14}$$

3. 
$$\lim_{x \rightarrow 0} \left( \frac{1}{x} - \frac{7}{4x^2 + 7x} \right) =$$

4. Find the value of  $A$  so that the  $\lim_{x \rightarrow 2} f(x) = 10$ . If this is not possible, explain why.

$$f(x) = \begin{cases} 3x + 4 & \text{if } x \leq 2 \\ 4x^2 + A & \text{if } x > 2 \end{cases}$$

5. 
$$\lim_{x \rightarrow -5} \frac{3x^2 + 17x + 10}{2x^3 + 9x^2 - 5x} =$$