

# Validating Vertical Asymptote

$$f(x) = \frac{2x^2 - x + 1}{x - 2}$$

$$\begin{array}{r} x - 2 = 0 \\ +2 \quad +2 \\ \hline x = 2 \end{array}$$

$$\lim_{x \rightarrow 2^+} \frac{2x^2 - x + 1}{x - 2} \xrightarrow{\text{Factor}} \text{Need Quadratic Formula.}$$

Just Use Limit Laws

$$2 \cdot \lim_{x \rightarrow 2^+} x^2 - \lim_{x \rightarrow 2^+} x + \lim_{x \rightarrow 2^+} 1$$

$$\lim_{x \rightarrow 2^+} x = \lim_{x \rightarrow 2^+} 2$$

$$2 \cdot \lim_{x \rightarrow 2^+} x \cdot \lim_{x \rightarrow 2^+} x - \lim_{x \rightarrow 2^+} x + \lim_{x \rightarrow 2^+} 1$$

$$\lim_{x \rightarrow 2^+} x = \lim_{x \rightarrow 2^+} 2$$

$$2 \cdot 2 \cdot 2 - 2 + 1$$

$$8 - 2$$

$$\frac{8}{1}$$

0  
undefined

$$\lim_{x \rightarrow 2^+} \frac{2x^2 - x + 1}{x - 2} = \infty$$

$$\lim_{x \rightarrow 2^+} \frac{2x^2 - x + 1}{x - 2} = \text{undefined}$$

Do This Mean As  $\lim_{x \rightarrow 2^+} \frac{2x^2 - x + 1}{x - 2} = \text{both } \infty$   
and  
under?