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MATH 2301 GW17: Analyzing a Rational Function with a Horizontal Asymptotep

A **partition number** for a function $g(x)$ is an x value where $g(x) = 0$ or g is *discontinuous*
Remark: A function $g(x)$ can only *change sign* at its *partition numbers*.

Let $f(x) = \dfrac{x}{x^2 + 9}$

(a) Find the partition numbers for $f(x)$.

(b) Make a sign chart for $f(x)$.

A **critical number** for a function $f(x)$ is an x value $x = c$ that has these two properties:
(1) $x = c$ is a *partition number* for $f'(x)$. That is, $f'(c) = 0$ or f' is *discontinuous* at $x = c$.
(2) f is continuous at $x = c$.
Remark: A function $f(x)$ can only have *relative extrema* at its *critical numbers*.

Let $f(x) = \dfrac{x}{x^2 + 9}$

(c) (**Presentation** by Student #2) Find the critical numbers for $f(x)$.

(d) Make a sign chart for $f'(x)$.