

FACTOR FIRST!

Rational Functions

End Behavior

- $n < m \Rightarrow$ H.A. $y = 0$
- $n = m \Rightarrow$ H.A. $y = \frac{a_n}{b_m}$
- $n > m \Rightarrow$ S.A. $y = q(x)$

$$\begin{array}{c|c} x & f(x) \\ \hline \infty & \nearrow \\ \infty & \nearrow \end{array}$$

$$\lim_{x \rightarrow \infty} f(x) = \infty$$

Zeros of Numerator

x-intercept
($_$, 0)

x-intercept

Evaluate $f(0) = _$
(0, $_$)

Zeros of Denominator

Vertical

Asymptote

$x = k$

$$\begin{array}{c|c} x & f(x) \\ \hline k & \downarrow \end{array}$$

$\lim_{x \rightarrow k^+} f(x) = ?$

$\lim_{x \rightarrow k^-} f(x) = ?$

Removable Discontinuity
Same multiplicity

$\lim_{x \rightarrow k^+} f(x) = ?$

$\lim_{x \rightarrow k^-} f(x) = ?$