




# Summary

## VERTICAL ASYMPTOTES

- Occur at x-values that make the denominator equal zero (but not the numerator).

## HORIZONTAL ASYMPTOTES

- $f(x) = \frac{\text{lower degree}}{\text{higher degree}}$   Horizontal asymptote is  $y = 0$ .
- $f(x) = \frac{\text{higher degree}}{\text{lower degree}}$   No horizontal asymptote.
- $f(x) = \frac{\text{degree } n}{\text{degree } n}$   Divide leading coefficients to determine horizontal asymptote.

## OBLIQUE ASYMPTOTES

- Occur when the numerator degree is one higher than the denominator degree.
- Divide the polynomials to determine the equation of the oblique asymptote.

## HOLES

- Occur at x-values that result in both the numerator and denominator being zero.