

2.6 Day 2.

11/03-04/1

In addition to vertical and horizontal asymptotes, we also have "Oblique Asymptotes!"

Oblique
(or slant)
Asymptote

- occurs when the polynomial in the numerator is a higher degree than the polynomial in the denominator.

In other words, if the H.A. is $y = \text{DNE}$, then we have an oblique asymptote.

Ex. #1

Find all the asymptotes and removable discontinuity.

$$f(x) = \frac{x^2 + 3x + 2}{x - 2} = \frac{(x+2)(x+1)}{(x-2)}$$

holes: none

V-A: $x = 2$

H.A: $y = \text{DNE}$

O.A: $y = x + 5$

We do not use the remainder

$$\begin{array}{r} x-2 \overline{) x^2 + 3x + 2} \\ \underline{-x^2 + 2x} \\ 5x + 2 \\ \underline{-5x + 10} \\ 0 + 12 \end{array}$$

Graph

$$f(x) = \frac{x^2 + 3x + 2}{x - 2} = \frac{(x+2)(x+1)}{x-2}$$

holes: none

V.A: $x = 2$

H.A: DNE

O.A: $y = x + 5$

