Zeros of the Denominator (that aren't also zeros of the numerator)

Horizontal Asymptotes:

Case 1: Degree of the Numerator > Degree of the Denominator

No HA

Case 2: Degree of the Numerator = Degree of the Denominator

HA: y = ratio of the Leading Coefficients

Case 3: Degree of the Denominator > Degree of the Numerator

HA: y = 0

Y-intercepts of Rational Functions: replace x with zero.

y-int = ratio of the constants.

X-intercepts of a Rational Function: Replace y with zero

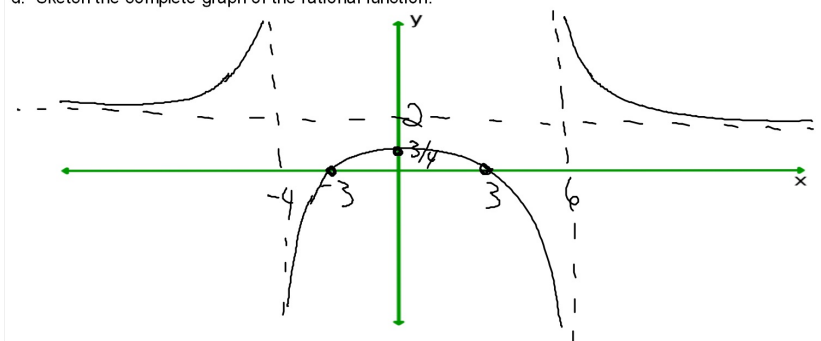X-intercepts of Rational Functions are zeros of the Numerator.

1. Use this function: $y = \dfrac{2x^2 - 18}{x^2 - 2x - 24}$ $\dfrac{2(x+3)(x-3)}{(x-6)(x+4)}$

a. Find the VA and HA, if any. Put these on the graph as dashed lines.

X = 6, −4   y = 2

b. Find the x and y intercepts, if any. Put these on the graph

X-int ±3   y-int = +3/4

c. Find the behavior of the graph on each side of each VA.

d. Sketch the complete graph of the rational function.

2. Use this function: $y = \dfrac{x+1}{x^2 - 3x - 10}$ $\dfrac{x+1}{(x-5)(x+2)}$

a. Find the VA and HA, if any. Put these on the graph as dashed lines.

VA: $X=5,-2$ HA: $y=0$

b. Find the x and y intercepts, if any. Put these on the graph

$X-INT = -1$ $Y-INT = -1/10$

c. Find the behavior of the graph on each side of each VA.

d. Sketch the complete graph of the rational function.