(use this page for additional notes and examples)

To find HA (horizontal asymptotes), Compare degree (highest exponent), Numerator to Denominator

1. higher degree / lower degree

no HA

graph will not flatten out on the ends

Ex. HW 16

$f(x) = \frac{x^4+1}{x^2+4x-12}$

degree 4 / degree 2

no HA

2. smaller degree / larger degree

HA $y=0$ *

Graph will flatten out along x-axis on the ends

Ex. HW 14

$f(x) = \frac{1}{x^2-7}$

degree 0 / degree 2

HA $y=0$

3. Same degree / Same degree

HA at $y = \frac{\text{Leading coeff Numer.}}{\text{Leading coeff Denom.}}$

Ex. HW 11

$f(x) = \frac{5-2x^1}{5x^1+4}$ deg 1 / deg 1

HA @ $y = \frac{-2}{5}$

Ex HW 13

(put negative with 3)

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

HA $y = \frac{-3}{-1} = y=3$

Sources Used:

1. MyLab Math for *College Algebra with Modeling and Visualization*, 6th Edition, Rockswold, Pearson Education Inc.
2. Desmos website, https://www.desmos.com/, © 2019, Desmos, Inc.
3. Wabbitemu calculator emulator version 1.9.5.21 by Revolution Software, BootFree ©2006-2014 Ben Moody, Rom8x ©2005-2014 Andree Chea. Website https://archive.codeplex.com/?p=wabbit