HAT
Graphing Rational Functions

1/19/18

January 19, 2018

AMC
American Mathematics Contest

February 7, 2018
(Wednesday)
Periods 1 - 3
Auditorium

All HAT students are expected to participate.

Warm Up: Use long division to rewrite $f(x)=\dfrac{2x-8}{x+3}$

x-int $2(x-4)$ Vertical Asymptote

This form emphasizes the horizontal asymptote.

Graph. (NC)

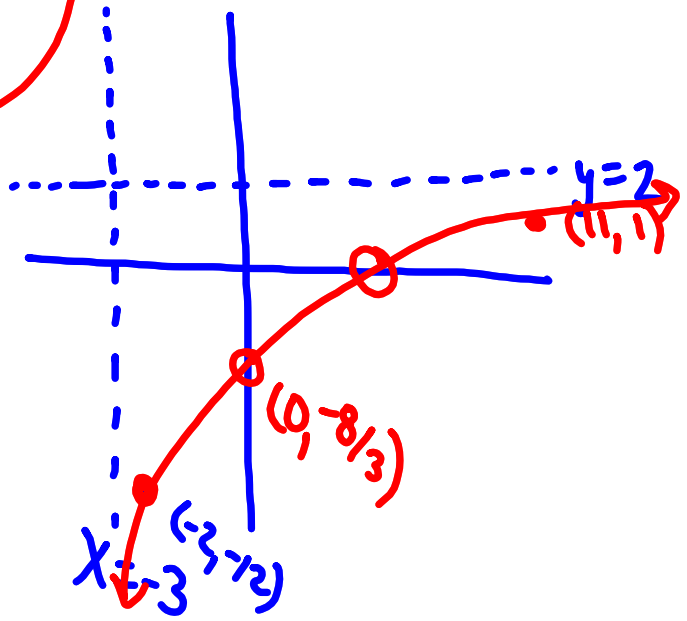
$$2-\frac{14}{x+3}$$

$$x+3\overline{)2x-8}$$

$$-(2x+6)$$

$$-14$$

$$f(x)=\frac{-14}{x+3}+2$$



Go Grab a Chromebook and go to Desmos.com

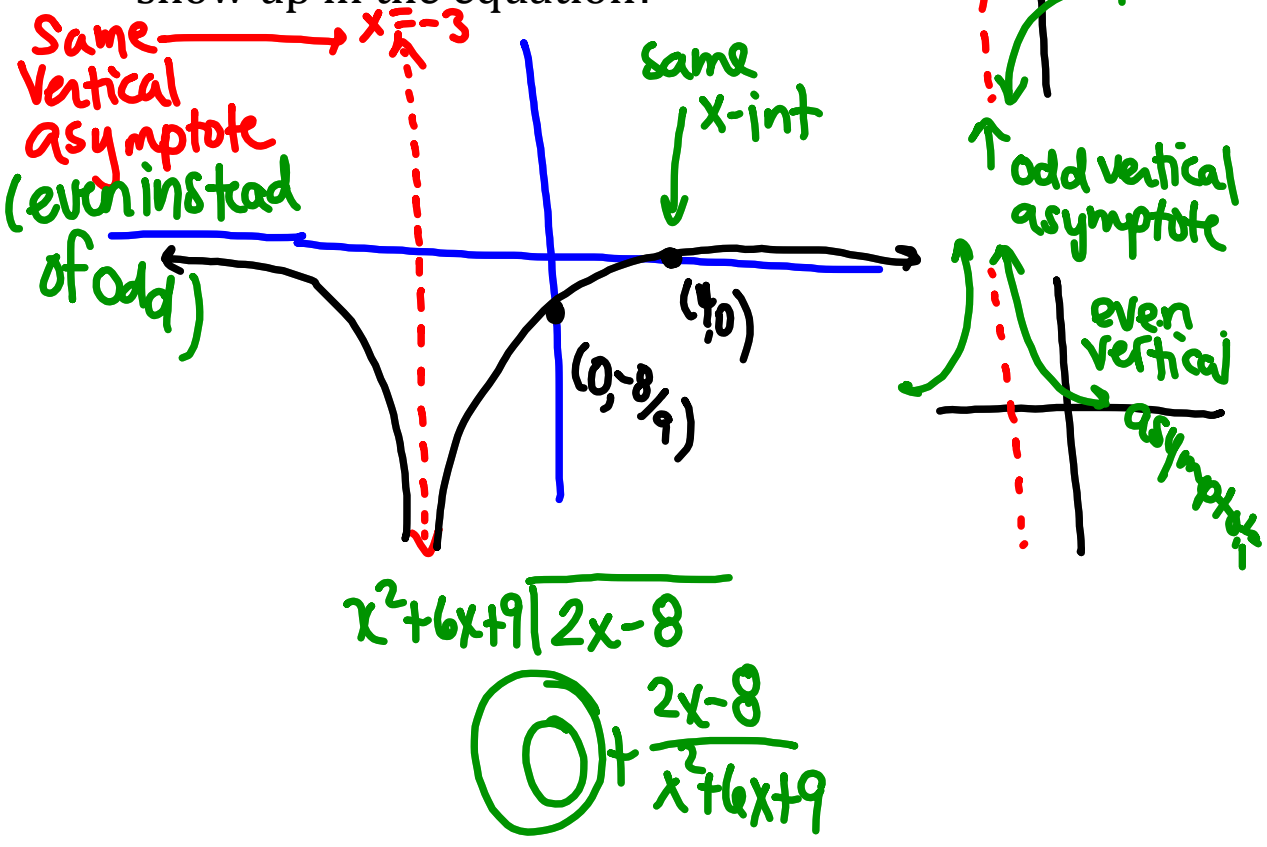
We are going to be looking at some graphs today!

Ex#1: Use Desmos to graph $f(x) = \dfrac{2x-8}{(x+3)^2}$

mult. of 2 → even vert. asymptote

Note the similarities/differences between this graph and the one in the WarmUp.

How do specific features of the graph show up in the equation?



$x^2+6x+9 \overline{)\,2x-8}$

$0 + \dfrac{2x-8}{x^2+6x+9}$

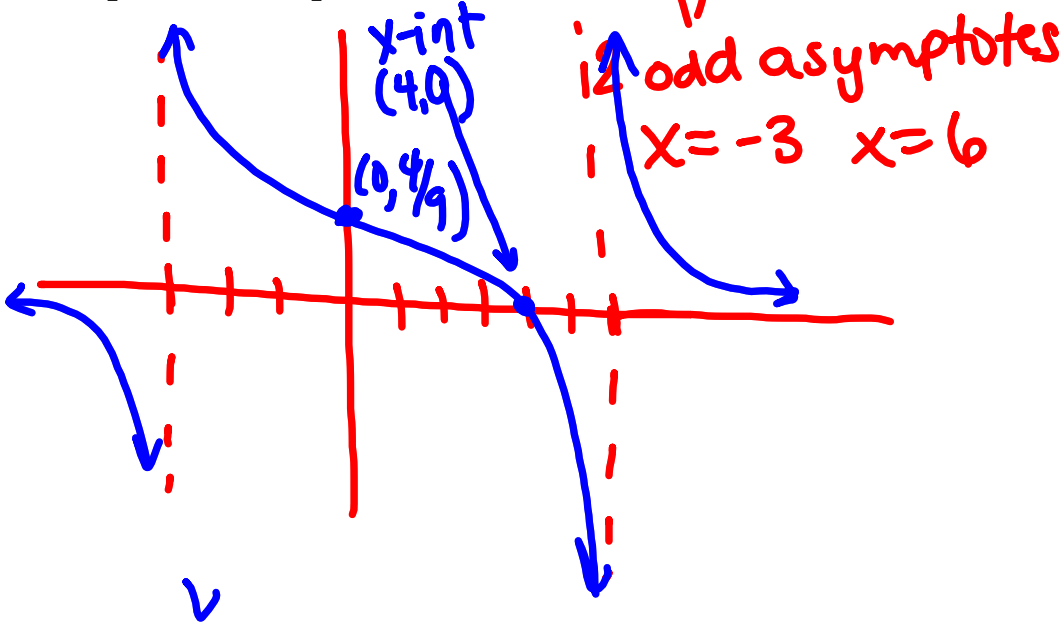
Ex#2: On desmos, graph $f(x) = \dfrac{2x-8}{(x+3)(x-6)}$

$f(0) = \dfrac{-8}{3(-6)}$

How does this graph compare to the others?

$f(0) = \dfrac{4}{9}$

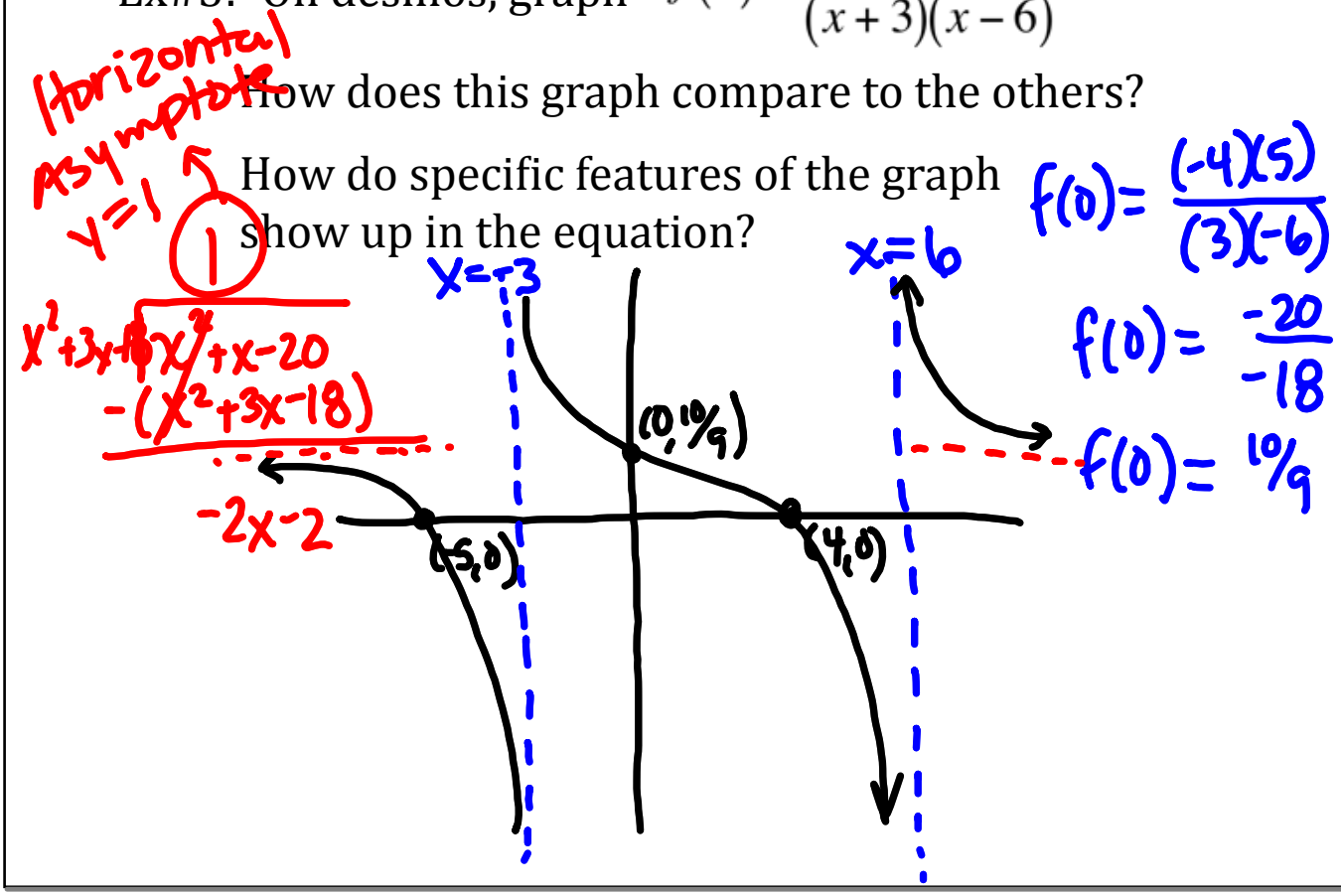
How do specific features of the graph show up in the equation?



Ex#3: On desmos, graph $f(x) = \dfrac{(x-4)(x+5)}{(x+3)(x-6)}$

How does this graph compare to the others?

How do specific features of the graph show up in the equation?



Ex#4: On desmos, graph $f(x) = \dfrac{(x-4)(x+5)}{(x+3)^2(x-6)^1}$

How does this graph compare to the others?

How do specific features of the graph show up in the equation?

x-int: (4,0) (-5,0)

Vertical Asymptotes:

$x = -3$

$x = 6$

Ex#5: On desmos, graph $f(x) = \dfrac{(x-4)(x+5)^2}{(x+3)^2(x-6)}$

How does this graph compare to the others?

How do specific features of the graph show up in the equation?

Assignment: (NC) page 558 #14, 15, 16, 18, 38, 39, 45

January 19, 2018