AGS 3 Name: _____ Period: _____ Date: _____

Notes

Warmup – Remember fractions? Show all work, think through the steps you are using to solve. You may use a calculator for basic calculation, but not to completely solve.

1. $\frac{5}{17}+\frac{8}{17}$

$\frac{13}{17}$

2. $\frac{3}{10}+\frac{16}{25}$

$\frac{15}{50}+\frac{32}{50}$

$\frac{47}{50}$

3. $\frac{4}{5}-\frac{7}{11}$

$\frac{44}{55}-\frac{35}{55}$

$\frac{9}{55}$

4. $\left(\frac{2}{3}\right)\cdot\left(\frac{4}{5}\right)$

$\frac{8}{15}$

5. $\left(\frac{2}{3}\right)\cdot\left(\frac{9}{16}\right)$

$\frac{18}{48}$

$\frac{3}{8}$

6. $\left(\frac{10}{33}\right)\div\left(\frac{15}{8}\right)$

$\frac{10}{33}\cdot\frac{8}{15}$

$\frac{80}{495}\rightarrow\frac{16}{99}$

7. What are the steps to add or subtract fractions?

get a common denominator, then add/subtract the numerator, reduce if possible

8. What are the steps to multiply fractions?

multiply straight across, reduce if possible

9. What are the steps to divide fractions?

take the reciprocal of second fraction, then multiply

10. $\frac{a}{b}+\frac{c}{d}=?$

$\frac{ad}{bd}+\frac{cb}{bd}=\frac{ad+cb}{bd}$

Investigation – Finding Asymptotes

Give the degree of each polynomial:

a. $x^4 - 3x + 4$ 4

b. $x(x-3)(x+2)$ 3

Give the degree of the numerator and the denominator

c. $\frac{x-4}{x^3+2x^2-4x+1}$

num: 1

den: 3

d. $\frac{x^2-4}{(x-3)(x+1)}$

num: 2

den: 2

How to find the vertical asymptotes: $x = ?$

find the values that will make the denominator zero, usually factor and the set the factors equal to zero and solve.

Find the vertical asymptotes for each rational function:

e. $\frac{1}{x}$ $x = 0$

f. $\frac{1}{x+2}$ $x = -2$

g. $\frac{1}{(x^2-7x+12)}$ $\frac{1}{(x-3)(x-4)}$ $x = 3, 4$

How to find the horizontal asymptote: $y = ?$

Step one: Determine the degree of the numerator and denominator

Step two:

Degree of the numerator is less than the degree of denominator		Degree of the numerator and the denominator are the same		Degree of the numerator is greater than the degree of the denominator	
$\frac{x-1}{x^2-5}$	$y = 0$	$\frac{2x}{3x-1}$ → $y = \frac{2}{3}$	$y = coefficients$	$\frac{x^2+6}{x-3}$	Slant asymptote

How to find the x-intercepts:

Set the numerator equal to zero and solve.

How to find the y-intercepts:

Substitute zero for x and Calculate.

What do the asymptotes tell you about the domain and range?

Vertical Asymptotes:

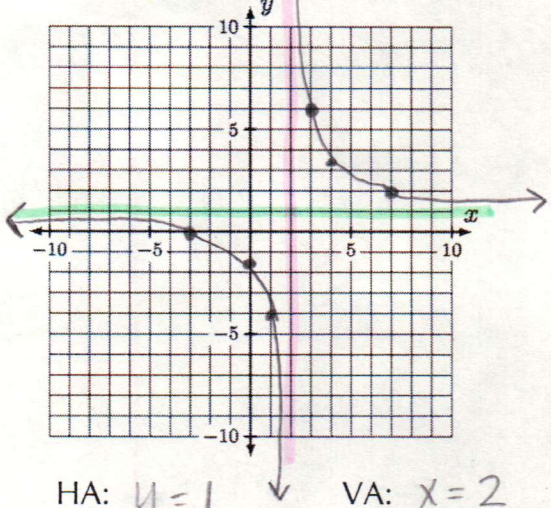
The VA are the restrictions on the domain

Horizontal Asymptotes:

The HA can be the restrictions on the range

Use the information above to help you find the asymptotes, intercepts, and the domain and range, then graph them. ***You must be able to find this info without a graphing calculator.*

h. $y = \frac{x+3}{x-2}$



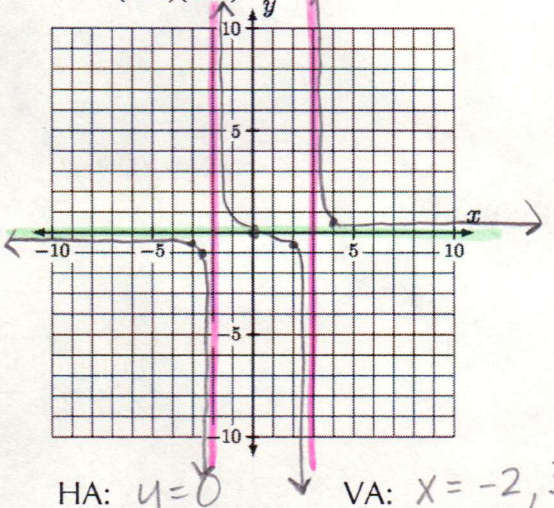
HA: $y = 1$ VA: $x = 2$

x-ints: $(-3, 0)$

y-int: $(0, -\frac{3}{2})$

D: $x \neq 2$ R: $y \neq 1$

i. $y = \frac{x}{(x+2)(x-3)}$



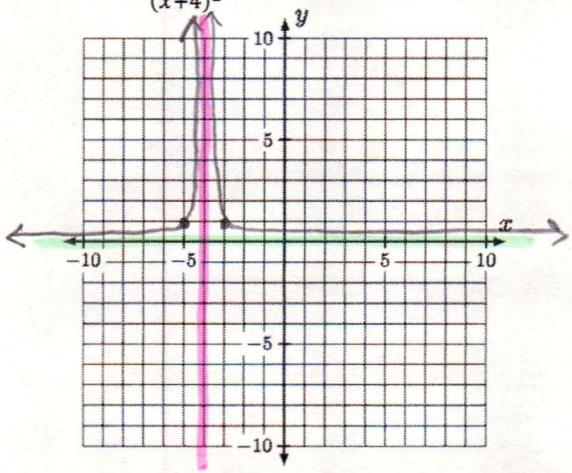
HA: $y = 0$ VA: $x = -2, 3$

x-ints: $(0, 0)$

y-int: $(0, 0)$

D: $x \neq -2, 3$ R: $\mathbb{R}$

j. $y = \frac{1}{(x+4)^2}$



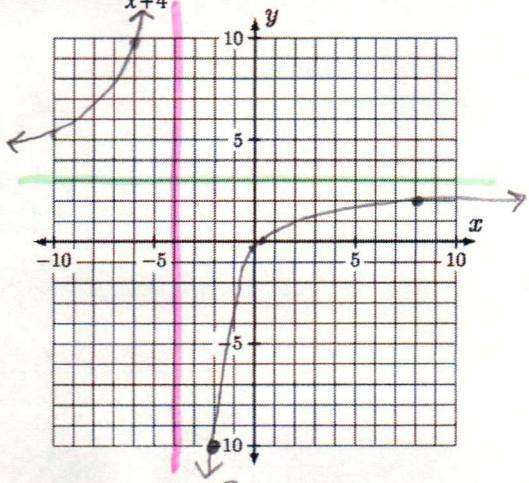
HA: $y=0$ VA: $x=-4$

x-ints: none

y-int: $(0, \frac{1}{16})$

D: $x \neq -4$ R: $(0, \infty)$

k. $y = \frac{3x-1}{x+4}$



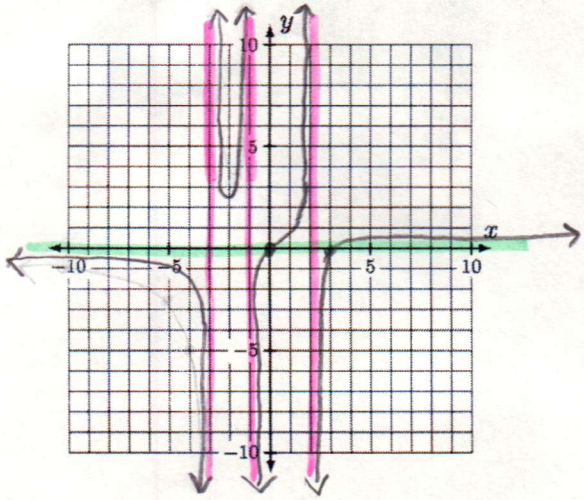
HA: $y=3$ VA: $x=-4$

x-ints: $(\frac{1}{3}, 0)$

y-int: $(0, -\frac{1}{4})$

D: $x \neq -4$ R: $y \neq 3$

l. $y = \frac{x^2-3x}{(x-2)(x+1)(x+3)}$ $x(x-3)$



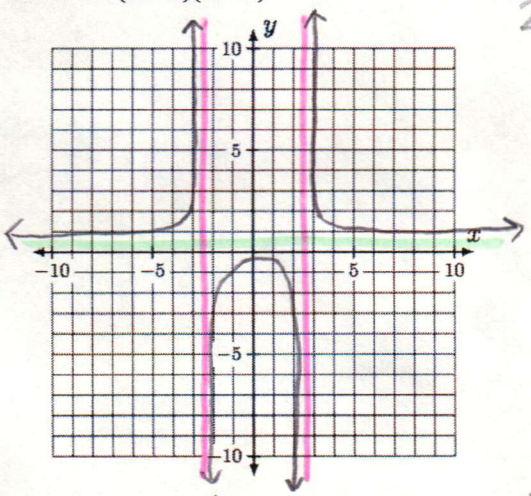
HA: $y=0$ VA: $x \neq 2, -1, -3$

x-ints: $(0,0)(3,0)$

y-int: $(0,0)$

D: $x \neq 2, -1, -3$ R: $\mathbb{R}$

m. $y = \frac{2x^2+3}{(2x+5)(2x-5)}$ $2x^2+3=0$, $2x^2=-3$



HA: $y=\frac{1}{2}$ VA: $x = \pm\frac{5}{2}$

x-ints: none

y-int: $(0, -\frac{3}{25})$

D: $x \neq \pm\frac{5}{2}$ R: $(-\infty, -\frac{3}{25}] \cup (\frac{1}{2}, \infty)$