

In 1-2, sketch the asymptotes and the graph of each function. Identify the asymptotes, domain and range.

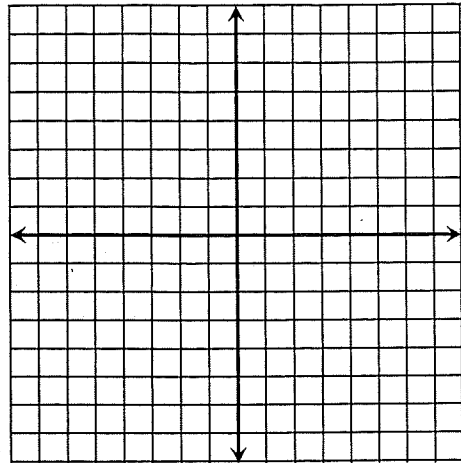
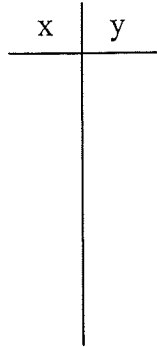
1. $y = \frac{4}{x-2} + 3$

VA: _____

HA: _____

D: _____

R: _____



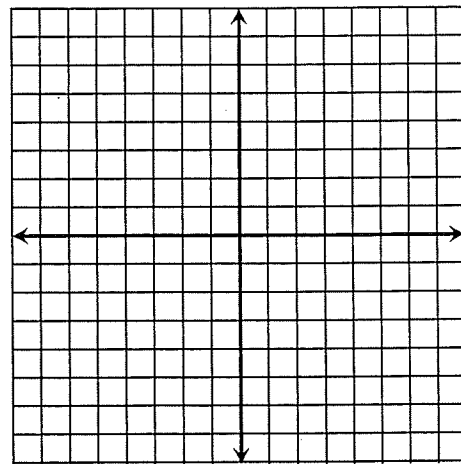
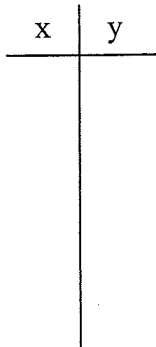
2. $y = \frac{-6}{x+1} - 2$

VA: _____

HA: _____

D: _____

R: _____



3. Write an equation for the translation of $y = \frac{1}{x}$ that has the given asymptotes and vertical stretch by 7, Reflected over the x axis and asymptotes at $x = -5$ and $y = 4$.

3. _____

Write the equation in the form $y = \frac{a}{x}$.

4. $5xy + 25 = 0$

4. _____

In 5 and 6, find the domain of each rational function. Identify all asymptotes and holes in the graph of each rational function. You do not have to graph this!

5. $f(x) = \frac{x^2 - 16}{x^2 + 9x + 20}$

5. D: _____

VA: _____

HA: _____

Holes: _____

$$6. g(x) = \frac{3x+9}{x^2+7x+12}$$

6. D: _____

VA: _____

HA: _____

Holes: _____

In 7 and 8, sketch the graph of the rational function. Identify all asymptotes and holes in the graph of the function.

$$7. \text{ Graph: } y = \frac{x^2-x-6}{x^2-4}$$

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

CV: 2, 3 $y = \frac{x-3}{x-2}$

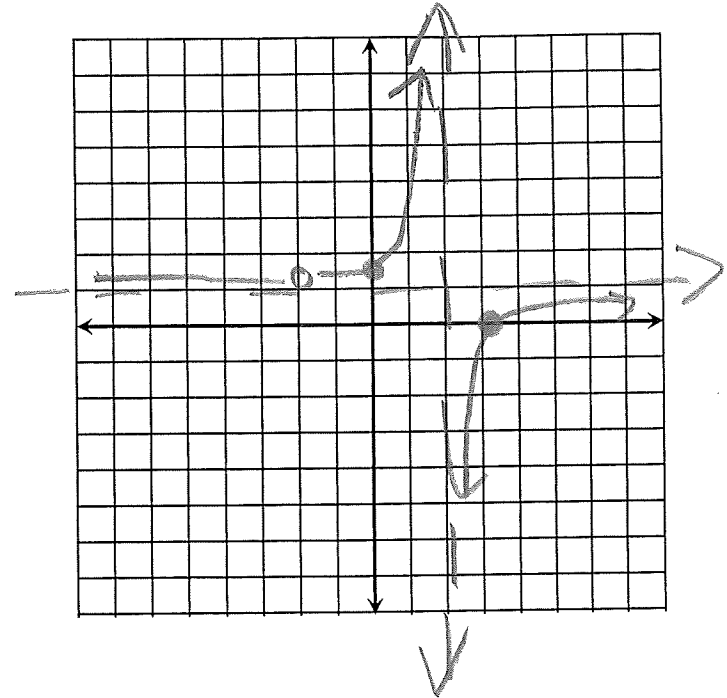
Root(s): $x = (3, 0)$

VA: $x = 2$

HA: $y = 1$

Hole = $(-2, -\frac{5}{4})$

y-int. = $(0, 1\frac{1}{2})$



Exclusion chart:

	2	3	
$x-3$	-	-	+
$x-2$	-	+	+
$f(x)$	+	-	+

$$8. f(x) = \frac{x^2-5x+6}{x^2+3x-10}$$

$$\frac{(x-3)(x-2)}{(x+5)(x-2)}$$

CV: 3, -5 $y = \frac{x-3}{x+5}$

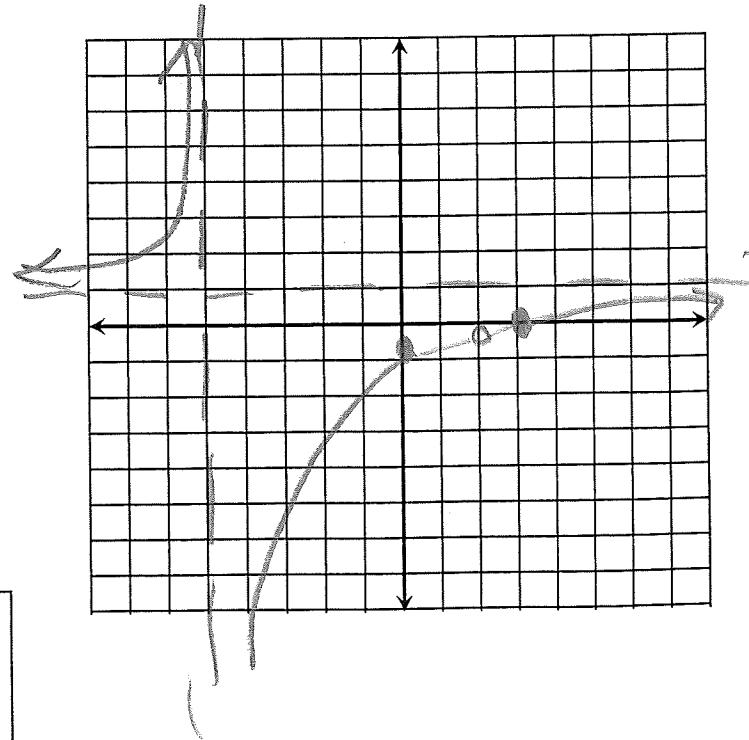
Root(s): $x = (3, 0)$

VA: $x = -5$

HA: $y = 1$

Hole = $(2, -1/7)$

y-int. = $(0, -3/5)$



Exclusion chart:

	-5	3	
$x-3$	-	-	+
$x+5$	-	+	+
$f(x)$	+	-	+

Algebra 2
TEST 8.2-8.3

Name Key
Date _____ Hour _____

In 1-2, sketch the asymptotes and the graph of each function. Identify the asymptotes, domain and range.

1. $y = \frac{4}{x-2} + 3$

$y = \frac{4}{x}$

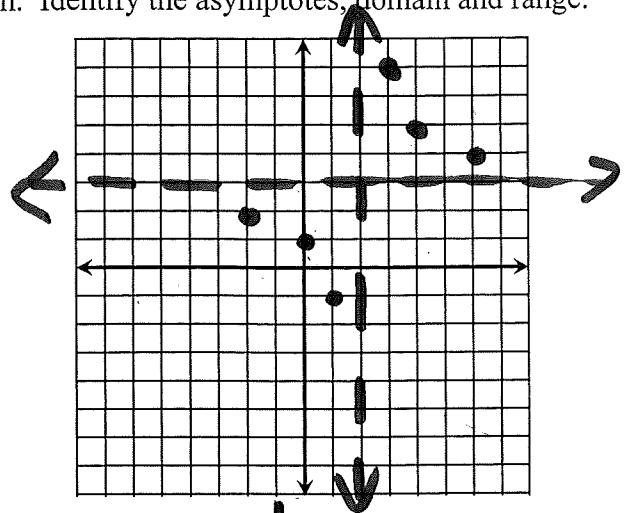
VA: $x=2$

HA: $y=3$

D: ann $x \neq 2$

R: ann $y \neq 3$

x	y
2	2



2. $y = \frac{-6}{x+1} - 2$

$y = \frac{6}{x}$

VA: $x=-1$

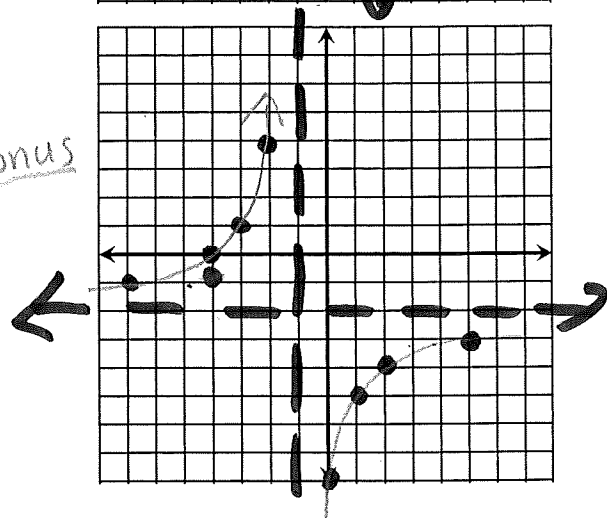
HA: $y=-2$

D: ann $x \neq -1$

R: ann $y \neq -2$

x	y
2	3
3	2

Bonus



3. Write an equation for the translation of $y = \frac{1}{x}$ that has the given asymptotes and vertical stretch by 7, Reflected over the x axis and asymptotes at $x = -5$ and $y = 4$.

$y = \frac{7}{x+5} + 4$

3. $y = \frac{-7}{x+5} + 4$

Write the equation in the form $y = \frac{a}{x}$.

4. $5xy + 25 = 0$

$\frac{5}{5}xy = -\frac{25}{5}$

$\frac{xy}{x} = -\frac{5}{x}$ $y = -\frac{5}{x}$

4. $y = \frac{-5}{x}$

In 5 and 6, find the domain of each rational function. Identify all asymptotes and holes in the graph of each rational function. You do not have to graph this!

5. $f(x) = \frac{x^2 - 16}{x^2 + 9x + 20}$

$\frac{(x-4)(x+4)}{(x+5)(x+4)}$

$\frac{-4-4}{-4+5} = \frac{-8}{1}$

5. D: ann $x \neq -5, -4$

VA: $x = -5, x = -4$

HA: $y = 1$

Holes: $(-4, -8)$

24

6. $g(x) = \frac{3x+9}{x^2+7x+12}$

$$\frac{3(x+3)}{(x+4)(x+3)}$$

$$\frac{3}{1}$$

6. D: any $x \neq -4, -3$

VA: $x = -4$

HA: $y = 0$

Holes: $(-3, 3)$

In 7 and 8, sketch the graph of the rational function. Identify all asymptotes and holes in the graph of the function.

7. Graph: $y = \frac{x^2 - x - 6}{x^2 - 4}$

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

$$y = \frac{x-3}{x-2}$$

CV: 3, 2

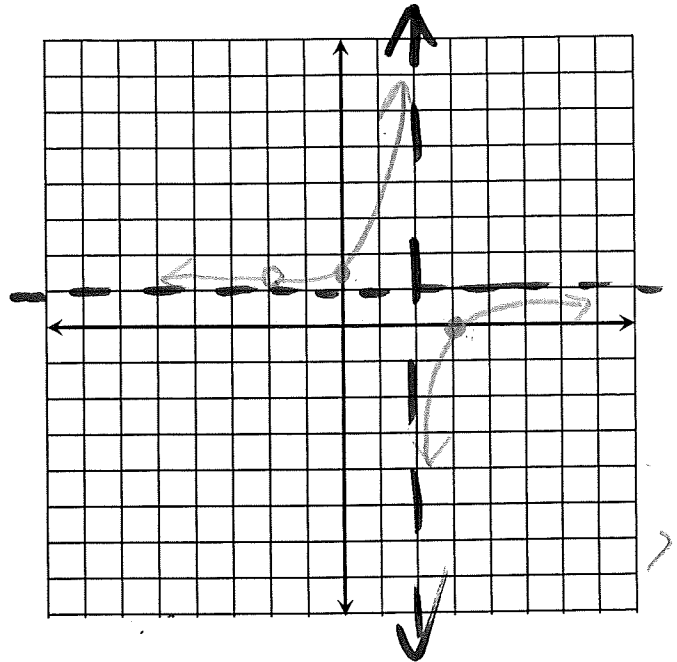
Root(s): $x =$ (3, 0)

VA: $x = 2$

HA: $y = 1$

Hole = $(-2, 5/4)$

y-int. = $(0, 1.5)$



Exclusion chart:

	2	3
$x-3$	-	-
$x-2$	-	+
$f(x)$	+	+

8. $f(x) = \frac{x^2 - 5x + 6}{x^2 + 3x - 10}$

$$\frac{(x-3)(x-2)}{(x+5)(x-2)}$$

hole

CV: 3, -5

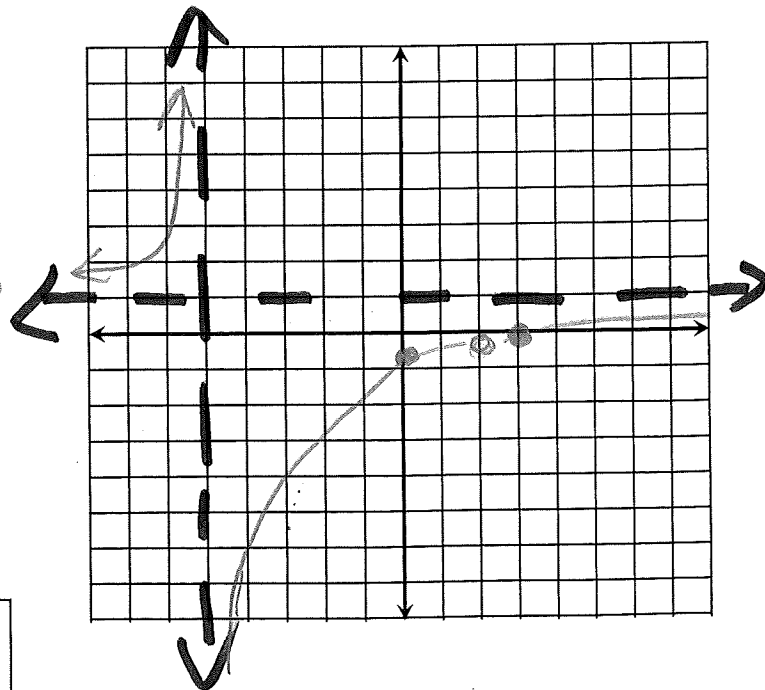
Root(s): $x =$ (3, 0)

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Exclusion chart:

	-5	3
$x-3$	-	-
$x+5$	-	+
$f(x)$	+	+