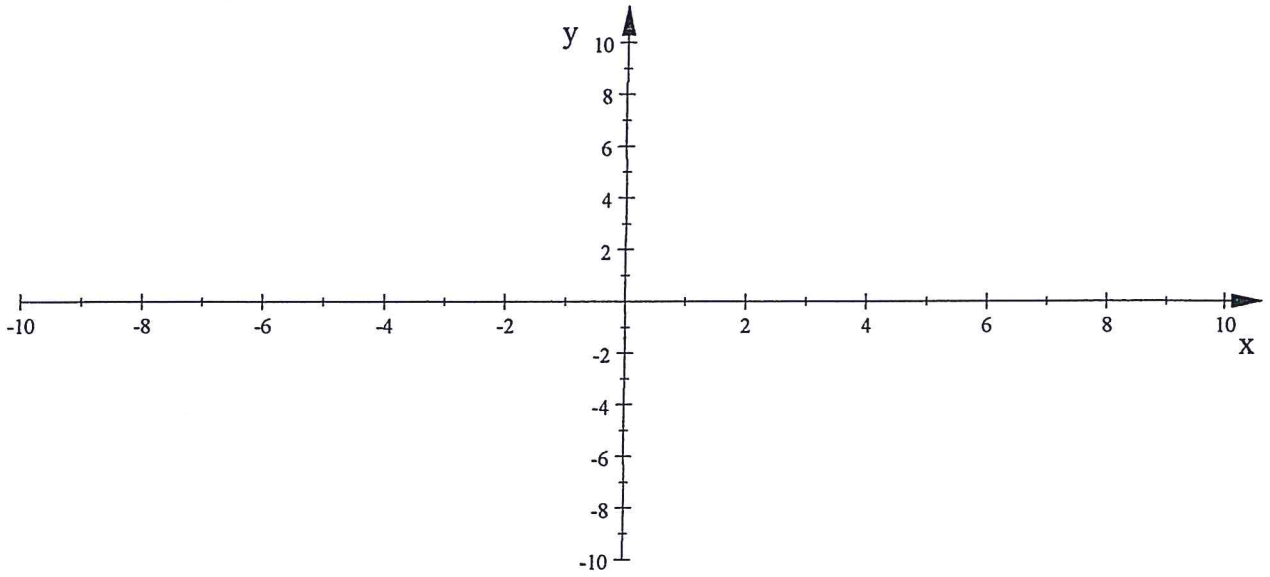
Algebra 2 Bellwork Monday, February 9, 2015

Use only a scientific calculator for this bellwork.

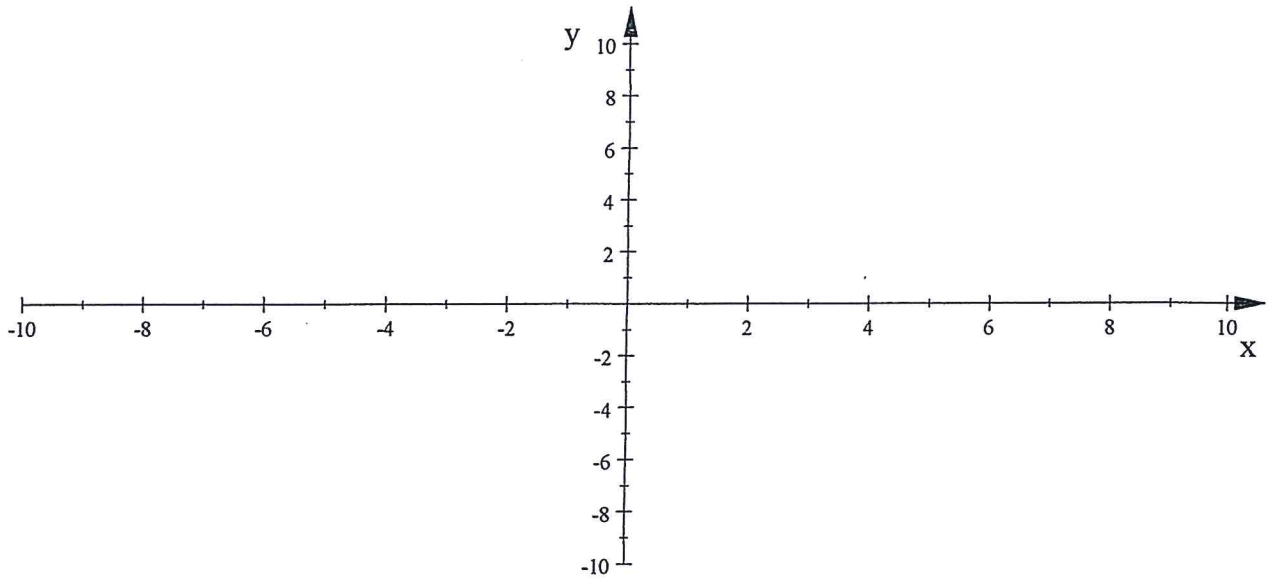
For each rational function:

a. Find the HA and VA and place them on the graph as dashed lines
b. Find the behavior of the graph around each VA and sketch it on the graph
c. Find the behavior of the graph at both ends of the HA (End Behavior) and sketch it on the graph.
d. Connect the behaviors of the graph around all asymptotes to see the whole graph.

1. $y = \dfrac{2(x-2)(x-7)}{(x-4)(x+3)} = \dfrac{2x^2-18x+28}{x^2-x-12}$



2. $y = \dfrac{(x-1)(x-8)}{(x-3)(x-5)} = \dfrac{x^2-9x+8}{x^2-8x+15}$



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Answers

Use only a scientific calculator for this bellwork.

For each rational function:

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1. $y = \dfrac{2(x-2)(x-7)}{(x-4)(x+3)} = \dfrac{2x^2-18x+28}{x^2-x-12}$

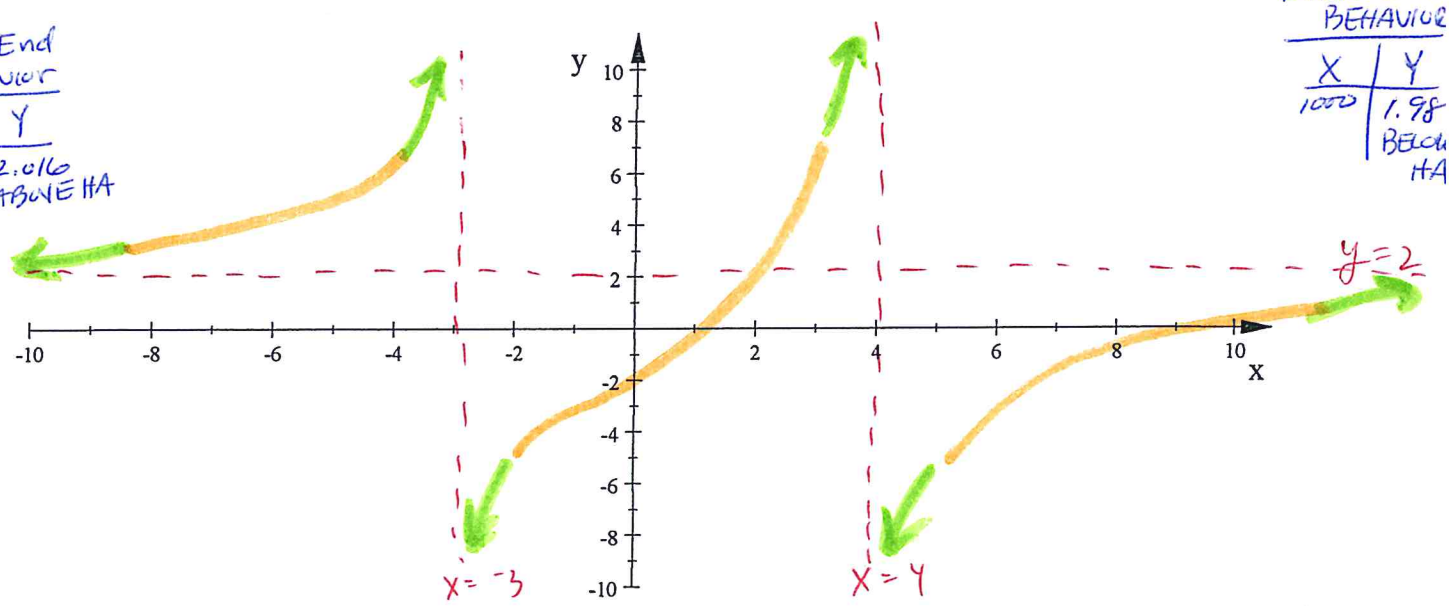
HA: $y = 2$ VA: $x = -3, 4$

Left End Behavior

X	Y
-1000	2.016 ABOVE HA

RIGHT END BEHAVIOR

X	Y
1000	1.98 BELOW HA



2. $y = \dfrac{(x-1)(x-8)}{(x-3)(x-5)} = \dfrac{x^2-9x+8}{x^2-8x+15}$

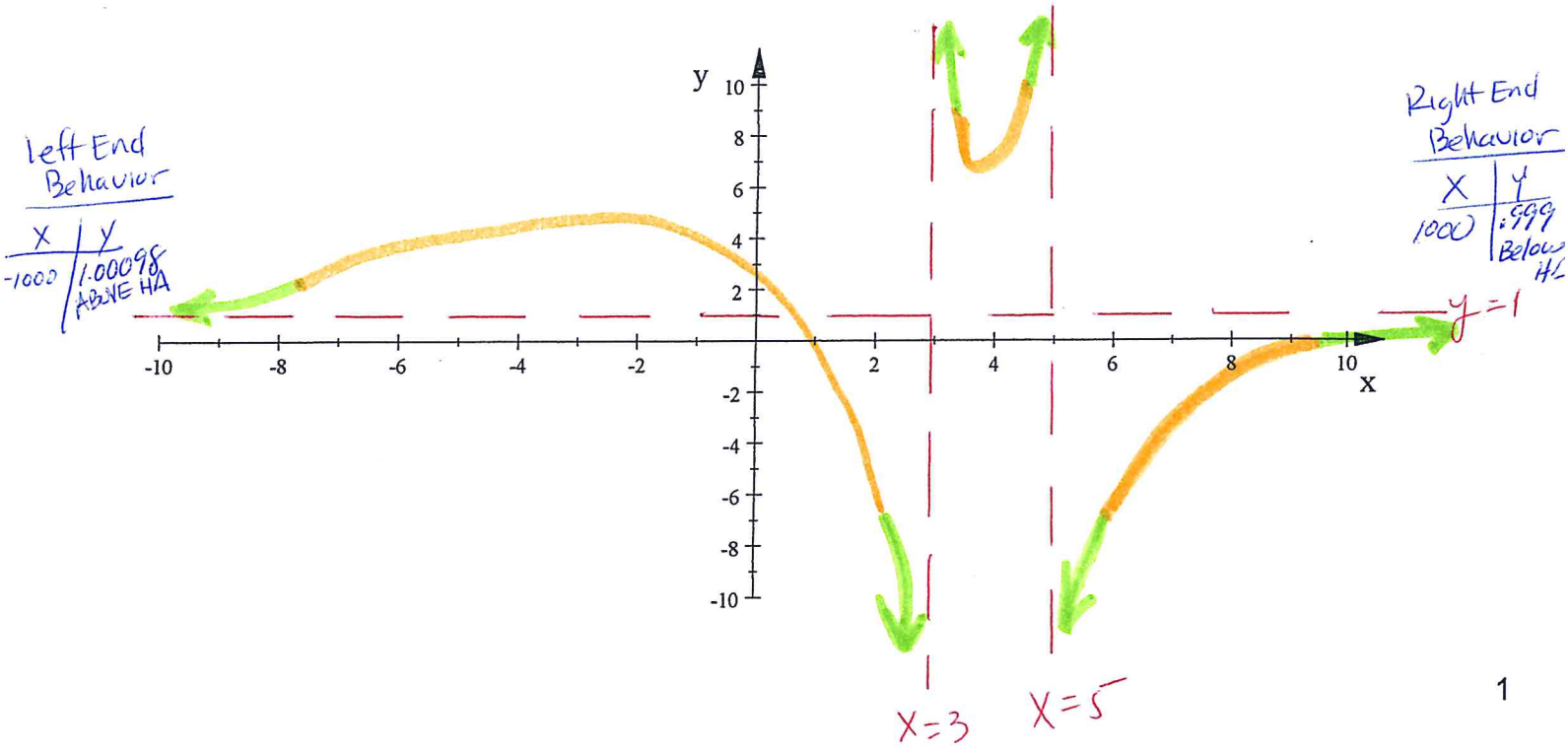
HA: $y = 1$ VA: $x = 3, 5$

Left End Behavior

X	Y
-1000	1.00098 ABOVE HA

Right End Behavior

X	Y
1000	.999 Below HA



Behavior around VA

① $y = \dfrac{2(x-2)(x-7)}{(x-4)(x+3)}$

VA $x = -3$

	x	y
left	-3.1	$\frac{+\ -\ -}{-\ \ -} = +$ (up)
right	-2.9	$\frac{+\ -\ -}{-\ \ +} = -$ (down)

VA ~~x~~ $= 4$

	x	y
Left	3.9	$\frac{+\ +\ -}{-\ \ +} = +$ (up)
Right	4.1	$\frac{+\ +\ -}{+\ \ +} = -$ (down)

Behavior Around VA

② $y = \dfrac{(x-1)(x-5)}{(x-3)(x-5)}$

VA $x = 3$

	x	y
Left	2.9	$\frac{+\ -}{-\ \ -} = -$ (Down)
Right	3.1	$\frac{+\ -}{+\ \ -} = +$ (up)

VA $x = 5$

	x	y
Left	4.9	$\frac{+\ -}{+\ \ -} = +$ (up)
Right	5.1	$\frac{+\ -}{+\ \ +} = -$ (down)