

# NOTES: GRAPH RATIONAL FUNCTIONS 2

DAY 7

Textbook Chapter 8.3

**OBJECTIVE:** Today you will learn how to graph special types of rational functions!

$$1. \quad y = \frac{x + 4}{x^2 - 16} = \frac{\cancel{(x+4)}}{\cancel{(x+4)}(x-4)} = \frac{1}{x-4}$$

Removable Discontinuities:  $x = -4, y = \frac{1}{-4-4} = -\frac{1}{8}$

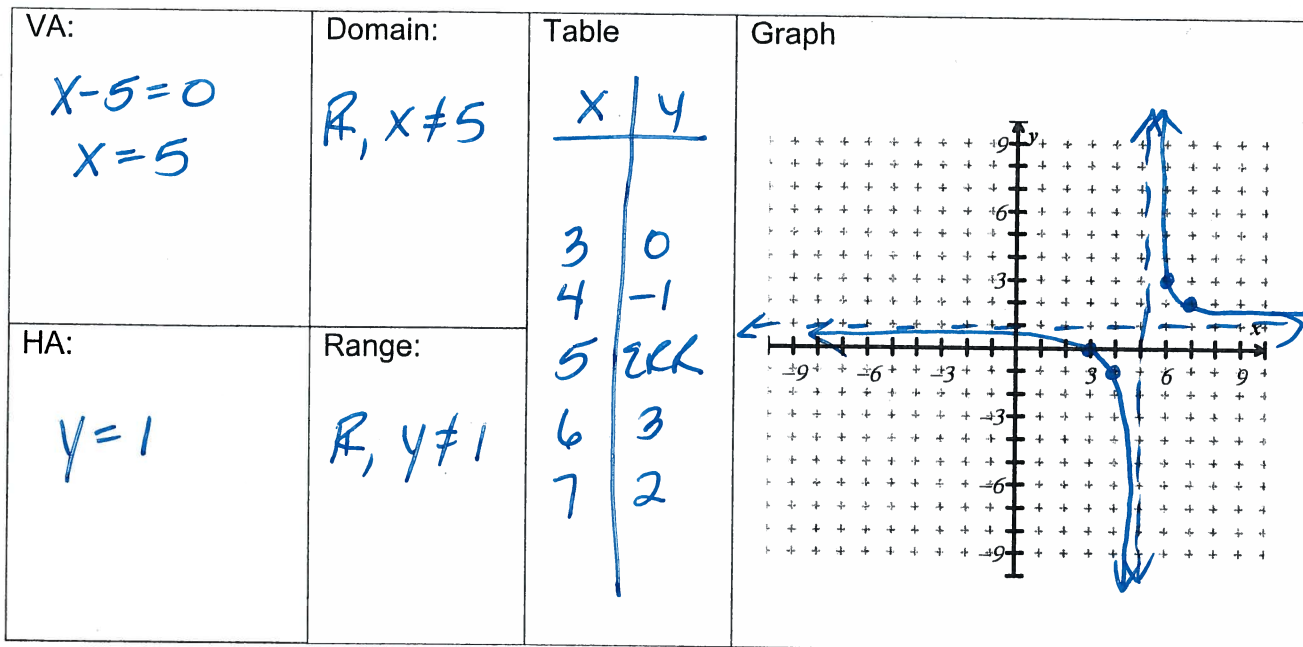
VA:	Domain:	Table	Graph														
$x - 4 = 0$ $x = 4$	$\mathbb{R}, x \neq 4$	<table border="1"> <thead> <tr> <th>x</th> <th>y</th> </tr> </thead> <tbody> <tr> <td>-4</td> <td><math>-\frac{1}{8}</math> Hole</td> </tr> <tr> <td>2</td> <td><math>-\frac{1}{2}</math></td> </tr> <tr> <td>3</td> <td>-1</td> </tr> <tr> <td>4</td> <td>ECR</td> </tr> <tr> <td>5</td> <td>1</td> </tr> <tr> <td>6</td> <td><math>\frac{1}{2}</math></td> </tr> </tbody> </table>	x	y	-4	$-\frac{1}{8}$ Hole	2	$-\frac{1}{2}$	3	-1	4	ECR	5	1	6	$\frac{1}{2}$	
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HA: $y = 0$	Range: $\mathbb{R}, y \neq 0$																

$$2. \quad y = \frac{(x - 1)(x + 4)}{(x + 4)}$$

VA:	Domain:	Table	Graph
SA:	Range:		

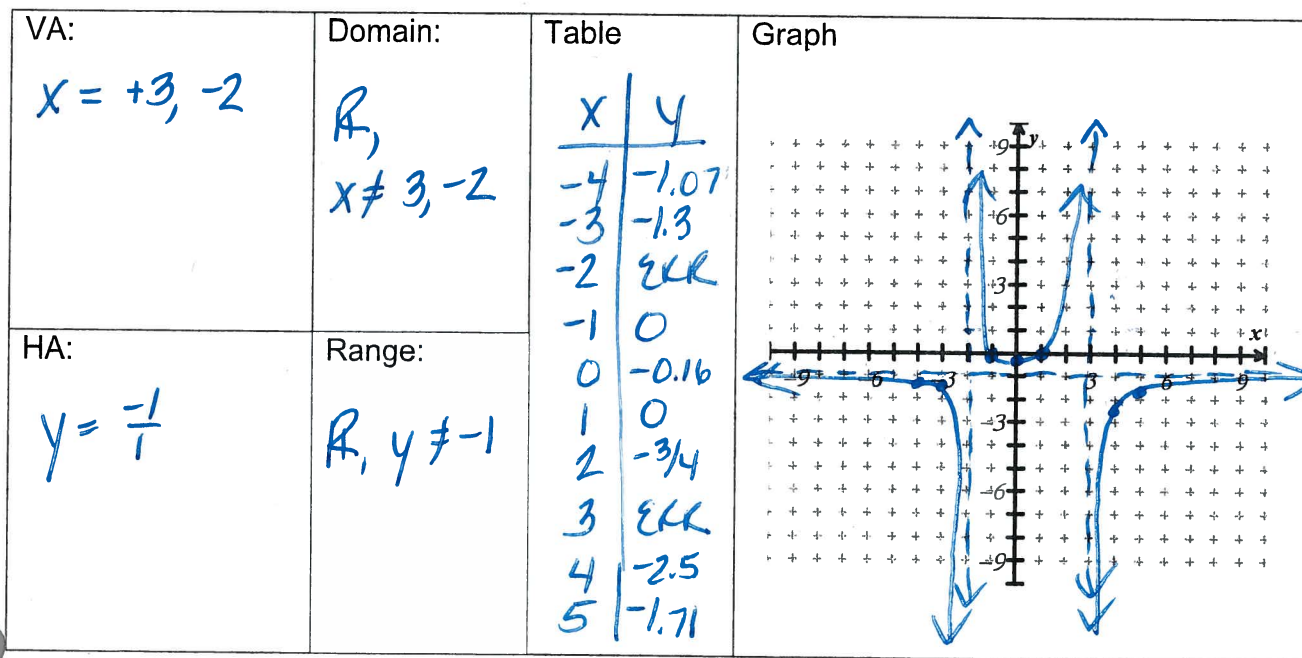
3.  $y = \frac{2}{x-5} + 1$

Removable Discontinuities: None



4.  $y = \frac{1-x^2}{x^2-x-6} = \frac{-(x^2-1)}{(x-3)(x+2)} = \frac{-(x+1)(x-1)}{(x-3)(x+2)}$

Removable Discontinuities: None



# PRACTICE: GRAPH RATIONAL FUNCTIONS 2

DAY 24

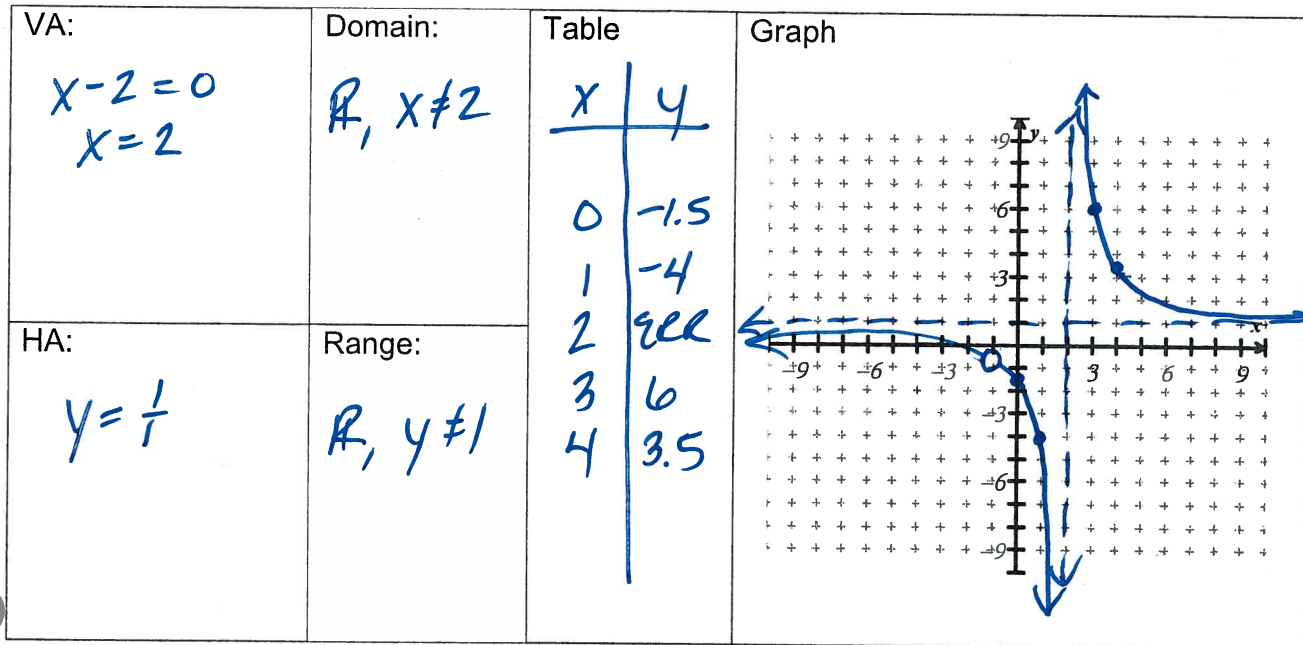
$$1. f(x) = \frac{x^2 + 4x + 3}{x^2 - x - 2} = \frac{(x+3)(x+1)}{(x-2)(x+1)} = \frac{(x+3)}{(x-2)}$$

$$\begin{aligned} x+1 &= 0 \\ x &= -1 \end{aligned}$$

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

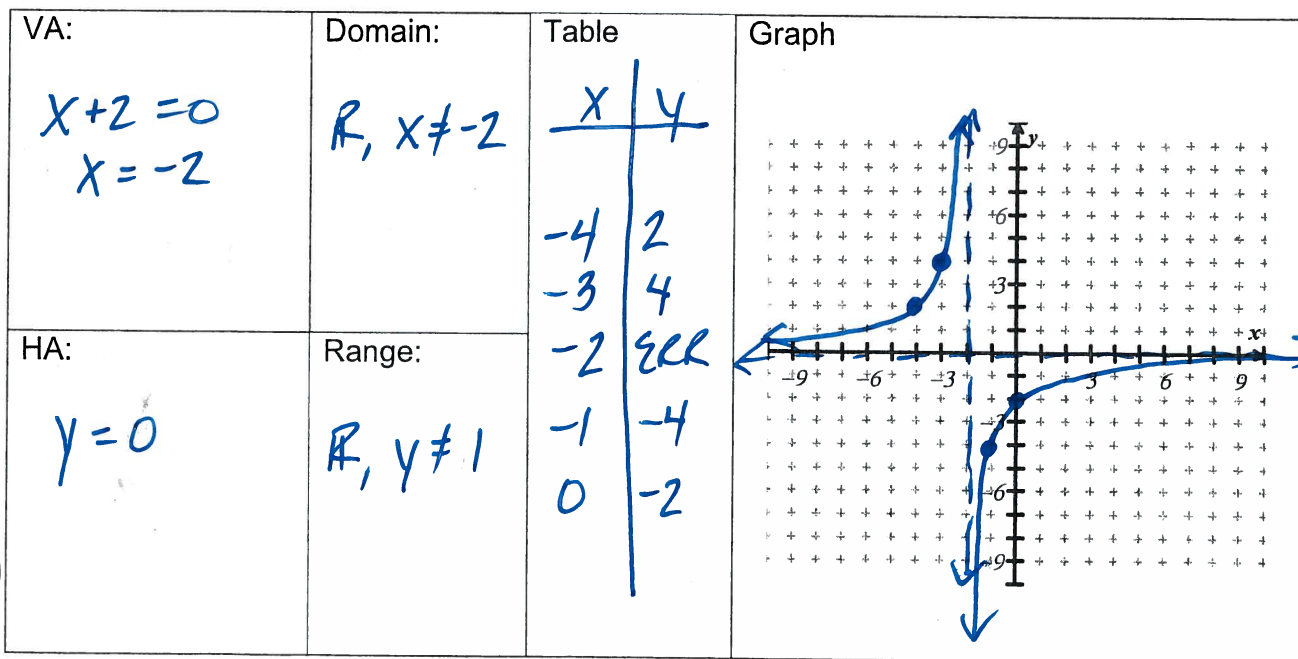
$$y = \frac{2}{-3}$$

Removable Discontinuities:  $(-1, -\frac{2}{3})$



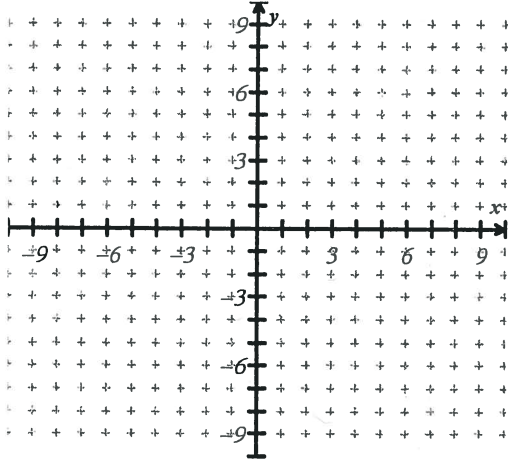
$$2. y = \frac{-4}{x+2}$$

Removable Discontinuities: None



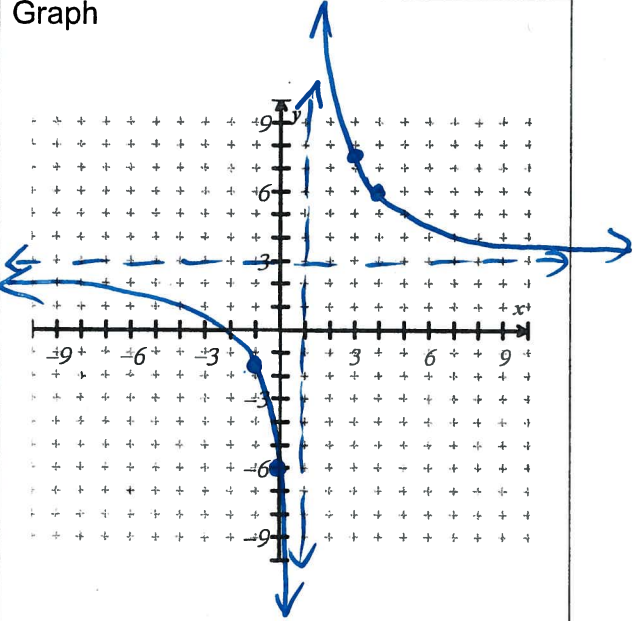
3.  $y = \frac{(x^2 - 4)(x + 3)}{(x + 3)}$

Removable Discontinuities: \_\_\_\_\_

VA:	Domain:	Table	Graph 
SA:	Range:		

4.  $g(x) = \frac{3x + 6}{x - 1} = \frac{3(x+2)}{(x-1)}$

Removable Discontinuities: None

VA: $x - 1 = 0$ $x = 1$	Domain: $\mathbb{R}, x \neq 1$	Table <table border="1" style="display: inline-table; vertical-align: middle;"> <thead> <tr> <th>x</th> <th>y</th> </tr> </thead> <tbody> <tr> <td>-1</td> <td>-1.5</td> </tr> <tr> <td>0</td> <td>-6</td> </tr> <tr> <td>1</td> <td><del>2</del></td> </tr> <tr> <td>2</td> <td>12</td> </tr> <tr> <td>3</td> <td>7.5</td> </tr> <tr> <td>4</td> <td>6</td> </tr> </tbody> </table>	x	y	-1	-1.5	0	-6	1	<del>2</del>	2	12	3	7.5	4	6	Graph 
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