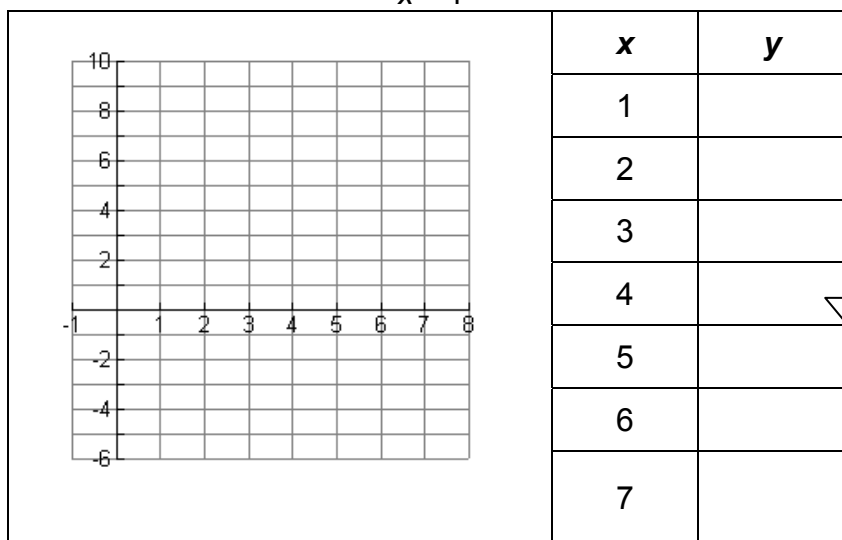


Finding Asymptotes

Consider the function $y = \frac{2x}{x-4}$. Complete the table and sketch the graph.



How can you tell that an asymptote occurs at $x = 4$?

x	y
3.5	
3.8	
3.9	
4.1	
4.2	
4.5	

What happens as you plug in numbers closer and closer to $x = 4$?

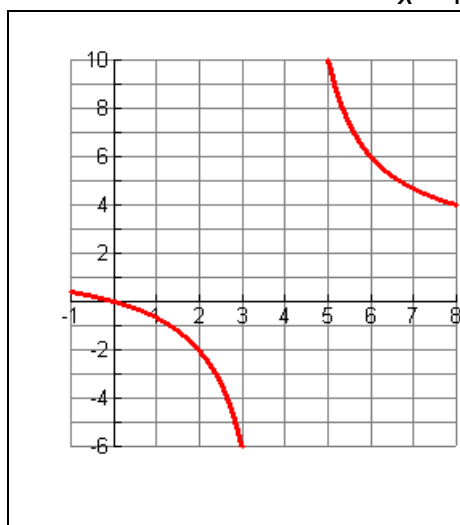
What kind of asymptote is this? _____

Use tables determine the location of such asymptotes for the following functions. Check graphically.

<p>1. $y = \frac{x-4}{x-2}$</p> <table border="1" style="width: 100%;"> <thead> <tr><th>x</th><th>y</th></tr> </thead> <tbody> <tr><td>0</td><td></td></tr> <tr><td>2</td><td></td></tr> <tr><td>4</td><td></td></tr> <tr><td>6</td><td></td></tr> </tbody> </table> <p>VA:</p>	x	y	0		2		4		6		<p>2. $y = \frac{x+8}{x-6}$</p> <table border="1" style="width: 100%;"> <thead> <tr><th>x</th><th>y</th></tr> </thead> <tbody> <tr><td>2</td><td></td></tr> <tr><td>4</td><td></td></tr> <tr><td>6</td><td></td></tr> <tr><td>8</td><td></td></tr> </tbody> </table> <p>VA:</p>	x	y	2		4		6		8		<p>3. $y = \frac{x+1}{x+3}$</p> <table border="1" style="width: 100%;"> <thead> <tr><th>x</th><th>y</th></tr> </thead> <tbody> <tr><td>-3</td><td></td></tr> <tr><td>-1</td><td></td></tr> <tr><td>1</td><td></td></tr> <tr><td>3</td><td></td></tr> </tbody> </table> <p>VA:</p>	x	y	-3		-1		1		3	
x	y																															
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Finding Asymptotes **KEY**

Consider the function $y = \frac{2x}{x-4}$. Complete the table and sketch the graph.



x	y
1	-2/3
2	-2
3	-6
4	Error
5	10
6	6
7	4.66...

How can you tell that an asymptote occurs at $x = 4$?

The calculator's Error message

x	y
3.5	-14
3.8	-38
3.9	-78
4.1	82
4.2	42
4.5	18

What happens as you plug in numbers closer and closer to $x = 4$? **y-values go way down negative (on the left of $x=4$)**

Or way up positive (on the right of $x=4$)

What kind of asymptote is this? vertical

Use tables determine the location of such asymptotes for the following functions. Check graphically.

<p>1. $y = \frac{x-4}{x-2}$</p> <p>VA: $x = 2$</p> <table border="1"> <thead> <tr> <th>x</th> <th>y</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>2</td> </tr> <tr> <td>2</td> <td>Error</td> </tr> <tr> <td>4</td> <td>0</td> </tr> <tr> <td>6</td> <td>0.5</td> </tr> </tbody> </table>	x	y	0	2	2	Error	4	0	6	0.5	<p>2. $y = \frac{x+8}{x-6}$</p> <p>VA: $x = 6$</p> <table border="1"> <thead> <tr> <th>x</th> <th>y</th> </tr> </thead> <tbody> <tr> <td>2</td> <td>-2.5</td> </tr> <tr> <td>4</td> <td>-6</td> </tr> <tr> <td>6</td> <td>Error</td> </tr> <tr> <td>8</td> <td>8</td> </tr> </tbody> </table>	x	y	2	-2.5	4	-6	6	Error	8	8	<p>3. $y = \frac{x+1}{x+3}$</p> <p>VA: $x = -3$</p> <table border="1"> <thead> <tr> <th>x</th> <th>y</th> </tr> </thead> <tbody> <tr> <td>-3</td> <td>Error</td> </tr> <tr> <td>-1</td> <td>0</td> </tr> <tr> <td>1</td> <td>0.5</td> </tr> <tr> <td>3</td> <td>0.66</td> </tr> </tbody> </table>	x	y	-3	Error	-1	0	1	0.5	3	0.66
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