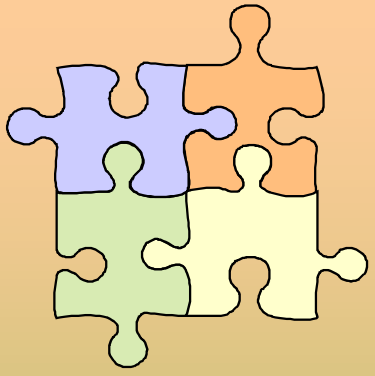

Asymptotes of Rational Functions

Sudoku

	A	B	C	D	E	F	G	H	I
1		1					2	9	
2			4	2		7			3
3	2	6		8		9			7
4		2		4					8
5			9	5		8	6		
6	5					6		4	
7	1			6		2		8	4
8	8			7		1	5		
9		4	6					7	

Kennedy's Classroom Resources

Asymptote Sudoku

Name _____

Directions: Solve each problem and place the answer in the indicated row and column of the puzzle. When finished, solve the remaining Sudoku puzzle. Remember, each row, each column, and each 3x3 square should have the numbers 1 – 9, with no repetition.
Note: Only use the **positive, integer** solution in the puzzle.

	A	B	C	D	E	F	G	H	I
1		1					2	9	
2			4	2		7			3
3	2	6		8		9			7
4		2		4					8
5			9	5		8	6		
6	5					6		4	
7	1			6		2		8	4
8	8			7		1	5		
9		4	6					7	

1. Find the horizontal asymptote of $f(x) = \frac{2x^2-1}{x^2}$. — C - 8

2. Find the vertical asymptote of $f(x) = \frac{x^3-4}{x-8}$. — E - 9

3. What value is not in the domain of $f(x) = \frac{x-5}{x-4}$? — G - 3

4. What is the missing power so that the following function has a horizontal asymptote of $y = 3$? — A - 4

$$f(x) = \frac{3x^{?}+2}{x^6-4}$$

5. Find the horizontal asymptote of $f(x) = \frac{10x^3-4}{2x^3}$. — F - 9

6. What is the missing power so that the following function has a horizontal asymptote of $y = 0$? — G - 9

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

7. What value is not in the domain of $f(x) = \frac{x^2}{x-3}$? — F- 4

8. Find the vertical asymptote of $f(x) = \frac{3x+2}{x-9}$. — D - 9

9. What is the missing value a so that the following function has a vertical asymptote of $x = 1$? — D - 6

$$f(x) = \frac{4x+8}{x-a}$$

10. Find the vertical asymptote of $f(x) = \frac{x+5}{x^2-6x+9}$. — A - 9

11. What value is not in the domain of $f(x) = \frac{2x}{2x-14}$? — G - 4

12. Find the horizontal asymptote of $f(x) = \frac{4x^4-3}{0.5x^4}$. — C - 1

Asymptote Sudoku Solutions

Name _____

Directions: Solve each problem and place the answer in the indicated row and column of the puzzle. When finished, solve the remaining Sudoku puzzle. Remember, each row, each column, and each 3x3 square should have the numbers 1 – 9, with no repetition.
Note: Only use the **positive, integer** solution in the puzzle.

	A	B	C	D	E	F	G	H	I
1		1	8				2	9	
2			4	2		7			3
3	2	6		8		9	4		7
4	6	2		4		3	7		8
5			9	5		8	6		
6	5			1		6		4	
7	1			6		2		8	4
8	8		2	7		1	5		
9	3	4	6	9	8	5	1	7	

1. Find the horizontal asymptote of $f(x) = \frac{2x^2-1}{x^2}$. C - 8 2

2. Find the vertical asymptote of $f(x) = \frac{x^3-4}{x-8}$. E - 9 8

3. What value is not in the domain of $f(x) = \frac{x-5}{x-4}$? G - 3 4

4. What is the missing power so that the following function has a horizontal asymptote of $y = 3$? A - 4 6

$$f(x) = \frac{3x^{?}+2}{x^6-4}$$

5. Find the horizontal asymptote of $f(x) = \frac{10x^3-4}{2x^3}$. F - 9 5

6. What is the missing power so that the following function has a horizontal asymptote of $y = 0$? G - 9 1

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

7. What value is not in the domain of $f(x) = \frac{x^2}{x-3}$? F- 4 3

8. Find the vertical asymptote of $f(x) = \frac{3x+2}{x-9}$. D - 9 9

9. What is the missing value a so that the following function has a vertical asymptote of $x = 1$? D - 6 1

$$f(x) = \frac{4x+8}{x-a}$$

10. Find the vertical asymptote of $f(x) = \frac{x+5}{x^2-6x+9}$. A - 9 3

11. What value is not in the domain of $f(x) = \frac{2x}{2x-14}$? G - 4 7

12. Find the horizontal asymptote of $f(x) = \frac{4x^4-3}{0.5x^4}$. C - 1 8

Asymptote Sudoku Solutions
Completed Puzzle

	A	B	C	D	E	F	G	H	I
1	7	1	8	3	6	4	2	9	5
2	9	5	4	2	1	7	8	6	3
3	2	6	3	8	5	9	4	1	7
4	6	2	1	4	9	3	7	5	8
5	4	3	9	5	7	8	6	2	1
6	5	8	7	1	2	6	3	4	9
7	1	7	5	6	3	2	9	8	4
8	8	9	2	7	4	1	5	3	6
9	3	4	6	9	8	5	1	7	2