

Simplifying Complex Fractions

Simplify each expression.

1.
$$\frac{\frac{(x+4)^2}{(x+5)^2}}{\frac{x+4}{x+5}}$$

2.
$$\frac{\frac{x^2 - 6x + 5}{x^2 - 4}}{\frac{x^2 - 25}{x^2 - 5x + 6}}$$

3.
$$\frac{\frac{3x - 9}{x^2 - 7x + 6}}{\frac{4x - 12}{x^2 - 36}}$$

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

5.
$$\frac{\frac{(x+y)^3}{(x+y)^2}}{\frac{x^2 + 2xy + y^2}{x+y}}$$

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$$\frac{\frac{(x+y)^3}{(x+y)^2}}{\frac{x^2 + 2xy + y^2}{x+y}}$$

6.
$$\frac{1 - 3x^{-1} - 4x^{-2}}{1 - x^{-2}}$$

Unit 7 Holt Resource
p. 15, Algebra 2 and Algebra 2 with Analysis

Tell whether x and y show *direct variation*, *inverse variation*, or *neither*.

1. $xy = 6$

2. $\frac{y}{x} = 12$

3. $y = 2x + 9$

4. $x = \frac{10}{y}$

5.

x	y
8	16
4	32
2	64
1	128

6.

x	y
12	132
17	187
25	275
31	341

7.

x	y
6	66
9	108
11	110
13	117

8.

x	y
3	27
2	40.5
9	9
4.5	18

- I. Identify the horizontal and vertical asymptotes of the graph of the function. Then state the domain and range of the function.

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

Horizontal asymptote:

Vertical asymptote:

Domain:

Range:

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

Horizontal asymptote:

Vertical asymptote:

Domain:

Range:

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

Horizontal asymptote:

Vertical asymptote:

Domain:

Range:

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

Horizontal asymptote:

Vertical asymptote:

Domain:

Range:

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

Horizontal asymptote:

Vertical asymptote:

Domain:

Range:

6. $y = \frac{-12}{x+15} - 19$

Horizontal asymptote:

Vertical asymptote:

Domain:

Range:

7. $y = \frac{5}{x-7} + 15$

Horizontal asymptote:

Vertical asymptote:

Domain:

Range:

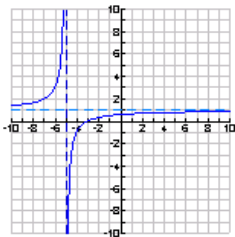
II. Match the function with its graph.

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

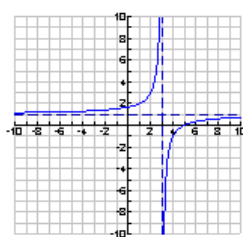
9. $y = \frac{x+3}{x+5}$

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

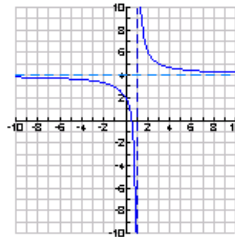
a



b



c



III. Graph the function. State the domain and range of the function. (**Domain and range answers are below the problem. Graphs are given below the set of problems.**)

11. $y = \frac{3}{x}$

12. $y = \frac{-2}{x+5} - 6$

13. $y = \frac{8}{x+4} - 8$

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

15. $y = \frac{5}{2x-6} + 4$

16. $y = \frac{x}{3x+4}$

17. $y = \frac{7x+2}{5x-3}$

18. $y = \frac{2+5x}{4x}$

19. $y = \frac{3x}{-x-7}$

Simplifying Complex Fractions

Simplify the complex fraction.

1.
$$\frac{\frac{x}{3} + 5}{7 + \frac{6}{x}}$$

2.
$$\frac{\frac{15}{x-2}}{\frac{1}{3} - \frac{5}{x-2}}$$

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

4.
$$\frac{\frac{x+4}{7} + 9}{2 + \frac{4}{x}}$$

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