

10.2 Multiply & Divide Rational Expressions

Write your questions here!



Simplify

$$\frac{20}{24}$$

$$\frac{4x}{7x}$$

$$\frac{4(x+3)}{(x-4)(x+3)}$$

$$\frac{ac}{bc}$$

$$\frac{4x+3}{2x-9}$$

Excluded Values =

Simplify

$$\frac{x+4}{x^2-16}$$

$$\frac{2p^2-12p}{p^2-2p-24}$$

Excluded Values =

Excluded Values =

Multiply

$$\frac{4x}{3x^2y} \cdot \frac{9xy^3}{2x}$$

$$\frac{x+5}{x^2+7x+12} \cdot \frac{3x+9}{x^2-25}$$

$$\frac{n-3}{4n^2+2n} \cdot 2n^2-5n-3$$

Divide

$$\frac{3x}{5x^2} \div \frac{6x}{15}$$

$$\frac{m+5}{2-m} \div \frac{3(m+5)}{m^2-4}$$

Divide

$$\frac{y-4}{y+5} \div y^2 + 5y - 36$$

Basic Complex Fractions

$$\frac{\frac{1}{3}}{\frac{3}{4}}$$

$$\frac{\frac{x}{4}}{\frac{2x}{5}}$$

$$\frac{\frac{x+2}{3}}{\frac{x^2-4}{9}}$$

$$\frac{\frac{3}{4x}}{\frac{5}{4x}}$$

TRY IT! Simplify

$$\frac{x(x+5)}{2x^2-50}$$

$$\frac{x-7}{x^2-13x+30} \cdot \frac{x^3-9x}{2x}$$

Excluded Values =

$$\frac{3}{4y^2} \div \frac{5}{20y}$$

$$\frac{\frac{3x+9}{4x}}{\frac{x+3}{8}}$$

SUMMARY:

Now,
summarize
your notes
here!



Simplify. State the excluded values

1. $\frac{32k^2}{80k}$

Excluded values:

2. $\frac{45n}{15n^2-45n}$

Excluded values:

3. $\frac{6r^2+42r}{r^2+r-42}$

Excluded values:

Multiply.

4. $\frac{8b^3}{2} \cdot \frac{8}{3}$

5. $\frac{8(x+5)}{(x+7)(x+5)} \cdot \frac{x+7}{2}$

6. $\frac{k+8}{4k+20} \cdot \frac{10k^2+50k}{5k}$

Divide.

7. $\frac{4n^2}{8} \div \frac{3n^3}{7n}$

8. $\frac{9}{x-1} \div \frac{7(x-8)}{7(1-x)}$

9. $\frac{6b+48}{b+8} \div \frac{6b-24}{5b}$

Simplify the complex fraction.

10. $\frac{\frac{5x}{4}}{\frac{x}{4}}$

11. $\frac{\frac{x^2}{5}}{\frac{x^2}{15}}$

12. $\frac{\frac{x+2}{x}}{\frac{1}{x}}$

Simplify. State the excluded values when asked.

13. $\frac{x^2-4x-5}{4x^3+4x^2} \cdot \frac{12x^3+8x^2}{12x+8}$

14. $\frac{\frac{3m^2-m}{4}}{\frac{3m-1}{m}}$

15. $\frac{56x^2+168x+112}{16x^2+8x-48}$

Excluded values:

16. $\frac{v^2+v-2}{v^2+9v-10} \div \frac{6v+12}{v^2+19v+90}$

Match the expression on the left with its simplified form on the right. That's fun!

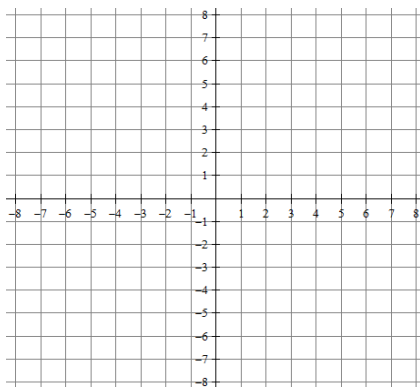
17. $\frac{x^2 - 25}{x^2 - 3x - 10}$	A. $\frac{x(x-1)}{3(x+1)}$
18. $\frac{x^2 + 5x + 6}{x^2 - x - 20} \cdot \frac{x^2 + 3x - 4}{x^2 + x - 2}$	B. $\frac{x+5}{x+2}$
19. $\frac{x^2 - 25}{x^2 - 16} \cdot \frac{x^2 - 4x}{2x+10}$	C. $\frac{12x}{x+3}$
20. $\frac{3x-6}{x^2 - 5x + 6}$	D. $\frac{x(x-5)}{2(x+4)}$
21. $\frac{x^2 - 9}{x^2 + x} \div \frac{x-3}{x^2 - 1}$	E. $\frac{x+3}{x-5}$
22. $\frac{\frac{x^2 - 1}{x^2 + 3x + 2}}{\frac{x^2 - 2x + 1}{x+2}}$	F. $\frac{3}{x-3}$
23. $\frac{\frac{3x^2 - 9x}{x-2}}{\frac{x^2 - 9}{4x-8}}$	G. $\frac{1}{x-1}$
24. $\frac{x^2}{x^2 + 2x + 1} \div \frac{3x}{x^2 - 1}$	H. $\frac{(x+3)(x-1)}{x}$

Algebra Skillz

GRAPH

1. Sketch a graph of

$$f(x) = -(x + 1)^2 + 3$$



SIMPLIFY

2. $4(2 - 4\sqrt{5})$

3. $(2 - \sqrt{3})(3 - \sqrt{2})$

SOLVE

4. Factor: $5x^2 - 10x$

5. Solve by factoring.

$$x^3 + 18x^2 + 45x = 0$$

5. Mr. Kelly wants to retire from teaching to pursue his real passion of quilt making. He starts a company called Kelly's Quilts that produces top of the line Geometric Quilts formed from various geometric shapes (he majored in Quiltometry in college). Using his math skills he creates an average cost per quilt function. This rational function determines the average cost per quilt given x , the number of quilts produced.

$$\bar{C}(x) = \frac{0.002x^3 - 9x + 4000}{x}$$

- a. Graph on your calculator with a friendly window. Fill in in the window below.
HINT: x stands for the number quilts and he won't make more than 200 quilts

- b. State any excluded values.

- c. Find $\bar{C}(5)$.

- d. What does $\bar{C}(5)$ mean?

- e. What does $\bar{C}(x) = 80$ mean?

- f. How many quilts should he produce in order to have the minimum cost per quilt?

