

Simplify Rational Expressions

Simplify. State any restrictions on the variable.

1. $\frac{x^2-4x-32}{x^2+4}$

$P-8$

$P \neq -4$

2. $\frac{x^2+3x-28}{x^2-49}$

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

$x \neq -7, 7$

3. $\frac{2m^2+10m-48}{8m+64}$

$\frac{m-3}{4}$

$m \neq -8$

Add/Subtract Rational Expressions

Simplify. Remember to get a common denominator first.

8. $\frac{3}{m+5} + \frac{8}{m^2-25}$

$\frac{3m-7}{(m+5)(m-5)}$

9. $\frac{k^2-2k-8}{k^2+k-2} - \frac{6}{k-1}$

$\frac{k-10}{k-1}$

Multiply/Divide Rational Expressions

Simplify. Remember to keep, change, flip when dividing.

4. $\frac{z}{z+1} \cdot \frac{z^2+3z+2}{z^2+5z}$

$\frac{z(z+2)}{z+3}$

$z \neq 0, -3$

5. $\frac{c+1}{c-5} \div \frac{c-2}{c^2-7c+10}$

$c+1$
 $c \neq 5, 2$

10. $\frac{w^2+2w-24}{w^2+w-30} + \frac{8}{w-5}$

$\frac{w+4}{(w-5)(w-6)}$

11. $\frac{3}{x+7} - \frac{4}{x-8}$

$\frac{-x-52}{(x+7)(x-8)}$

Solve Rational Equations

Solve. Remember to check for extraneous solutions.

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

$x = -\frac{11}{3}$

13. $\frac{v^2}{v-4} = \frac{16}{v-4}$

$v = -4$

14. $\frac{a}{a-36} + \frac{2}{a-6} = \frac{1}{a-6}$

$a = -9$

6. $\frac{x^2-16}{x^2+5x+6} \div \frac{x^2+5x+4}{x^2-2x-8}$

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

$x \neq -3, -2, -4, -1$

7. $\frac{b^2}{b+9} \cdot \frac{b^2+15b+54}{b^2-4b}$

$\frac{b(b+6)}{b-4}$

$b \neq -9, 0, 4$