

Show ALL work to receive credit.

Find the excluded values of the following expressions.

1. $\frac{10x}{4x+40}$

2. $\frac{x+12}{x^2+9x+18}$

Simplify the rational expressions, if possible.

3. $\frac{88x}{8x^2-24x}$

4. $\frac{x+9}{x^2+x-90}$

Find the product.

5. $\frac{x+3}{9x-27} \cdot \frac{x-3}{x^2-2x-15}$

Find the quotient.

6. $\frac{9x-27}{x^2-9} \div (x+3)$

Find the sum.

7. $\frac{12x-12}{x+5} + \frac{13x+10}{x+5}$

8. $\frac{2x}{x-7} + \frac{2x}{x+1}$

Find the difference.

9. $\frac{10x-2}{x+4} - \frac{3x-14}{x+4}$

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

Solve the following equations.

11. $\frac{4}{x+16} = \frac{x}{16}$

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

13. $\frac{5}{x+4} + \frac{x}{x+3} = \frac{-5}{x^2+7x+12}$