

Find the restrictions on the variable. Then simplify. Show all work.

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

2. $\frac{x}{x^2-x}$

3. $\frac{8}{x^2-4}$

4. $\frac{x-7}{x^2-49}$

5. $\frac{5}{x^2+3x+2}$

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

Simplify. Show all work.

7. $\frac{7x}{21}$

8. $\frac{18x^2}{12x}$

9. $\frac{36x^4}{42x^7}$

10. $\frac{2x^2+x}{4x}$

11. $\frac{x^2-1}{6x+6}$

12. $\frac{x^2-3x-10}{x^2+5x+6}$

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

14. $\frac{x^3-x^2-12x}{x^3-9x}$

Perform the indicated operation. Simplify. Show all work.

$$15. \frac{4x}{3} \cdot \frac{2}{x}$$

$$16. \frac{12x^3}{25} \cdot \frac{40}{9x^2}$$

$$17. \frac{6}{x^2 - 9x + 20} \cdot (5x - 25)$$

$$18. \frac{4x}{x+1} \cdot \frac{x^2 - 6x - 7}{x^3 + 7x^2}$$

$$19. \frac{2x-6}{x^2-25} \cdot \frac{x^2+6x+5}{x^2-9}$$

$$20. \frac{16x}{25x^2-9} \cdot \frac{25x^2+30x+9}{8x}$$

$$21. \frac{4x^3}{9} \div \frac{8x^3}{3x^5}$$

$$22. \frac{x-7}{x^2-1} \div \frac{x-7}{x^2+x}$$

$$23. \frac{x+3}{x^2-3x-10} \div \frac{x+3}{8x+16}$$

$$24. \frac{x^2-4x+4}{x+8} \div (x-2)$$

$$25. \frac{x^2-5x+4}{x^2+3x} \div \frac{x^2-3x-4}{2x^2+6x}$$

$$26. \left(\frac{x}{x+2} \cdot \frac{4}{x^3} \right) \div \frac{2x-2}{x+2}$$