

**Simplify the rational expression, if possible.**

1. $\frac{4x^2}{40x^2 - 12x}$ $\frac{x}{10x-3}$	2. $\frac{x^2 + 2x - 24}{x^2 + 7x + 6}$ $\frac{x-4}{x+1}$	3. $\frac{x^2 + 4x + 4}{x^2 - 5x + 4}$ $\frac{(x+2)^2}{(x-4)(x-1)}$
4. $\frac{x-4}{x^3-64}$ $\frac{1}{x^2+4x+16}$	5. $\frac{3x^3 + 6x^2 + 12x}{x^3 - 8}$ $\frac{3x}{x-2}$	6. $\frac{5x^2 + 18x - 8}{10x^2 - x - 2}$ $\frac{(5x-2)(x+4)}{(5x+2)(2x-1)}$

**Multiply the expressions. Simplify the result.**

7. $\frac{5x^3y}{x^2y^2} \cdot \frac{y^3}{15x^2}$ $\frac{y^2}{3x}$	8. $\frac{x(x-3)}{x-2} \cdot \frac{(x+3)(x-2)}{x}$ $(x-3)(x+3)$	9. $\frac{3x-12}{x+5} \cdot \frac{x+6}{2x-8}$ $\frac{3(x+6)}{2(x+5)}$
10. $\frac{x^2 + 3x - 4}{x^2 + 4x + 4} \cdot \frac{2x^2 + 4x}{x^2 - 4x + 3}$ $\frac{2x(x+4)}{(x+2)(x-3)}$	11. $\frac{x^2+5x-36}{x^2-49} \cdot (x^2 - 11x + 28)$ $\frac{(x+9)(x-4)^2}{x+7}$	

**Divide the expressions. Simplify the result.**

12. $\frac{5x^2y^3}{x^7} \div \frac{30xy^4}{y^3}$ $\frac{y^2}{6x^4}$	13. $\frac{x^2-6x-27}{2x^2+2x} \div \frac{x^2-14x+45}{x^2}$ $\frac{x(x+3)}{2(x+1)(x-5)}$
14. $\frac{3x^2 + 13x + 4}{x^2 - 4} \div \frac{4x + 16}{x + 2}$ $\frac{3x+1}{4(x-2)}$	15. $\frac{x^2-8x+15}{x^2+4x} \div (x^2 - x - 20)$ $\frac{x-3}{x(x+4)^2}$

**Perform the indicated operation and simplify.**

16. $\frac{3x^2}{x-8} + \frac{6x}{x-8}$ $\frac{3x(x+2)}{x-8}$	17. $\frac{5x}{x+3} + \frac{15}{x+3}$ 5	18. $\frac{12}{5x} + \frac{7}{6x}$ $\frac{107}{30x}$
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$$19. \frac{8}{3x^2} - \frac{5}{4x}$$

$$\frac{-15x + 32}{12x^2}$$

$$20. \frac{x-4}{5x} - \frac{12}{5(x-4)}$$

$$\frac{x^2 - 20x + 16}{5x(x-4)}$$

$$21. \frac{12}{x^2 + 5x - 24} + \frac{3}{x-3}$$

$$\frac{3(x+12)}{(x+8)(x-3)}$$

$$22. \frac{3}{x+4} - \frac{1}{x+6}$$

$$\frac{2(x+7)}{(x+6)(x+4)}$$

$$23. \frac{9}{x-3} + \frac{2x}{x+1}$$

$$\frac{2x^2 + 3x + 9}{(x+1)(x-3)}$$

$$24. \frac{x+4}{x^2-4} - \frac{15}{x-2}$$

$$\frac{-2(7x+13)}{(x+2)(x-2)}$$

$$25. \frac{-15x}{x^2 - 8x + 16} + \frac{12}{x-4}$$

$$\frac{-3(x+16)}{(x-4)^2}$$

$$26. \frac{x^2 - 5}{x^2 + 5x - 14} - \frac{x+3}{x+7}$$

$$\frac{-x+1}{(x+7)(x-2)}$$

Simplify the complex fraction.

$$27. \frac{\frac{x}{3} - 6}{10 + \frac{4}{x}}$$

$$\frac{x(x-18)}{6(5x+2)}$$

$$28. \frac{15 - \frac{2}{x}}{\frac{x}{5} + 4}$$

$$\frac{5(15x-2)}{x(x+20)}$$

$$29. \frac{\frac{16}{x-2}}{\frac{4}{x+1} + \frac{6}{x}}$$

$$\frac{8x(x+1)}{(x-2)(5x+3)}$$

$$30. \frac{\frac{1}{2x-5} - \frac{7}{8x-20}}{\frac{x}{2x-5}}$$

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

$$31. \frac{\frac{3}{x-2} - \frac{6}{x^2-4}}{\frac{3}{x+2} + \frac{1}{x-2}}$$

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

$$32. \frac{\frac{1}{3x^2-3}}{\frac{5}{x+1} - \frac{x+4}{x^2-3x-4}}$$

$$\frac{x-4}{12(x-1)(x-6)}$$