

Simplify. Write each rational expression in lowest terms. Show all work.

1. $\frac{7}{6} - \frac{5}{12}$

2. $\frac{11}{18} - \left(\frac{-3}{4}\right) + 2$

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

Assume that the expressions given are denominators of fractions. Find the least common denominator (LCD) for each group.

4. $24a^3b^4, 18a^5b^2$

5. $m^2 + 2m - 3, m^2 + 5m + 6$

Simplify. Write each rational expression in lowest terms. Show all work.

6. $\frac{9}{x-2} - \frac{3}{x}$

LCD: _____

7. $\frac{3}{x^2+4x+4} + \frac{7}{x^2+5x+6}$

LCD: _____

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

LCD: _____

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

LCD: _____

Perform the indicated operations and simplify.

10. $2\sqrt{12} + \sqrt{48} - \sqrt{3}$

11. $3\sqrt{5} - 7\sqrt{45} + \sqrt{12}$

12. $(2\sqrt{3} + \sqrt{5})(2\sqrt{3} - \sqrt{5})$

13. $(3\sqrt{2} + 1)(5 - \sqrt{3})$

Rationalize the denominator. *Hint: To rationalize, multiply by a form of 1.*

14. $\frac{3}{\sqrt{7}}$

15. $\frac{\sqrt{6}}{\sqrt{3} - 4}$