

1. Factor the following quadratic expressions:

a) $x^2 + 5x + 6$

b) $x^2 + 3x - 18$

c) $4x^2 + 4x - 15$

d) $3x^2 + 8x - 3$

2. Simplify the following rational expressions. State any restrictions.

a) $f(x) = \frac{(x-2)(x+3)(2x-1)}{3(x-2)(2x-1)(x+3)}$

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

c) $g(x) = \frac{x^2 - x - 2}{x^2 - 3x - 4}$

d) $f(x) = \frac{x^2 - 4x + 4}{2x - 4}$

Working with rational expressions:

Adding and subtracting rational expressions → Need common denominator!

All the time → FACTOR when possible to simplify the expression.

3. Add or subtract the following rational expressions. State any restrictions.

a) $\frac{2}{x} + \frac{3}{2}$

b) $\frac{2}{x-2} + 4$

c) $\frac{2}{x-2} + \frac{1}{x-4}$

d) $\frac{12a^3}{25b} - \frac{12a^3}{5b^2}$

e) $\frac{x^2 - 10x + 21}{x-3} - \frac{x^2 - 4x - 45}{x+5}$

4. Multiply or divide the following rational expressions. State any restrictions.

a) $\frac{6(x^2 + x - 6)}{x^2 - 3x + 2} \times \frac{x-1}{x(x+3)}$

b) $\frac{3x-9}{14(x-2)} \div \frac{3x(x-3)}{7x-14}$