

# Simplifying Algebraic Fractions Mastery

*Practice Worksheet (Compact Layout)*

## I DO

Simplify fully

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

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## WE DO

Simplify fully

$$\frac{x^2 - 25}{2x^2 - 7x - 15}$$

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## YOU DO 1

Simplify fully

$$\frac{x^2 - 4}{5x^2 - 8x - 4}$$

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**YOU DO 2**

Simplify fully

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

**CHALLENGE**

Simplify fully

$$\frac{2x^2 - 18}{4x^2 - 10x - 6}$$

**ANSWERS & WORKED SOLUTIONS****I Do****Step 1:** Factorise the numerator (difference of two squares):  $x^2 - 16 = (x - 4)(x + 4)$ **Step 2:** Factorise the denominator:  $3x^2 + 10x - 8 = (3x - 2)(x + 4)$ **Step 3:** Cancel the common factor of  $(x + 4)$ . **Answer:**  $\frac{x - 4}{3x - 2}$ **We Do****Step 1:** Factorise numerator:  $x^2 - 25 = (x - 5)(x + 5)$ **Step 2:** Factorise denominator:  $2x^2 - 7x - 15 = (2x + 3)(x - 5)$ **Step 3:** Cancel common factor of  $(x - 5)$ . **Answer:**  $\frac{x + 5}{2x + 3}$ **You Do 1****Step 1:** Factorise numerator:  $x^2 - 4 = (x - 2)(x + 2)$ **Step 2:** Factorise denominator:  $5x^2 - 8x - 4 = (5x + 2)(x - 2)$ **Step 3:** Cancel common factor of  $(x - 2)$ . **Answer:**  $\frac{x + 2}{5x + 2}$

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**ANSWERS & WORKED SOLUTIONS (CONTINUED)**

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**You Do 2**

**Step 1:** Factorise numerator:  $x^2 - 1 = (x - 1)(x + 1)$

**Step 2:** Factorise denominator:  $4x^2 + 5x + 1 = (4x + 1)(x + 1)$

**Step 3:** Cancel common factor of  $(x + 1)$ . **Answer:**  $\frac{x - 1}{4x + 1}$

**Challenge**

**Step 1:** Factor out the common 2 in the numerator:  $2(x^2 - 9) = 2(x - 3)(x + 3)$

**Step 2:** Factor out the common 2 in the denominator:  $2(2x^2 - 5x - 3) = 2(2x + 1)(x - 3)$

**Step 3:** Cancel the common factors of 2 and  $(x - 3)$ . **Answer:**  $\frac{x + 3}{2x + 1}$