

Practice

Expressions: 'Cancelling' – Do's and Don'ts

Answer these problems, then check your answers using the key on the next page. If you missed something, look at the solutions after the answer key, and if you still don't understand, watch the review video again.

#1) Simplify as fully as possible: $7x^2 + 13x - 5x^2 + 6 - 13x$

#2) Simplify as fully as possible: $\frac{16}{10}$

#3) Simplify as fully as possible: $\frac{24x^2}{12x}$

#4) Simplify as fully as possible: $\frac{2+8x}{2}$

#5) Simplify as fully as possible: $\frac{3x^2+1}{3x^2}$

#6) Simplify as fully as possible: $\frac{15x^2+18x}{18x}$

#7) Simplify as fully as possible: $\frac{3a^2b + 4ab^2}{4ab^2}$

#8) Simplify as fully as possible: $\frac{2x^3 + 8x^2 + 4x}{4x}$

#9) Simplify as fully as possible: $\frac{6x^4 + 2x^3 - 2x^2 - 4x + 2x^3 + 8x^2 + 4x}{8x^2 + 8x - 8x^2 - 6x}$

#10) Simplify as fully as possible: $\frac{9x^4 - 3x^3 - 3x - 3x^2 - 9x^4 + 6x^3 + 9x^2 + 3x}{4x^2 - 8x + 5x^2 + 8x}$

Answers:

#1) $2x^2 + 6$

#2) $\frac{8}{5}$

#3) $2x$

#4) $1 + 4x$

#5) $\frac{3x^2 + 1}{3x^2}$

#6) $\frac{5x + 6}{6}$

#7) $\frac{3a + 4b}{4b}$

#8) $\frac{x^2 + 4x + 2}{2}$

#9) $x(3x^2 + 2x + 3)$ or $3x^3 + 2x^2 + 3x$

#10) $\frac{x + 2}{3}$

Solutions:

#1) Simplify as fully as possible: $\frac{7x^2 + 13x - 5x^2 + 6 - 13x}{1}$

$$\boxed{2x^2 + 6}$$

#2) Simplify as fully as possible: $\frac{16}{10}$

$$\frac{2 \cdot 8}{2 \cdot 5}$$
$$\left(\frac{2}{2}\right) \cdot \frac{8}{5} \quad \boxed{\frac{8}{5}}$$

#3) Simplify as fully as possible: $\frac{24x^2}{12x}$

$$\frac{(\cancel{12}x) 2x}{(\cancel{12}x) 1} \quad \boxed{2x}$$

#4) Simplify as fully as possible: $\frac{2+8x}{2}$

$$\frac{(\cancel{2})(1+4x)}{(\cancel{2})(1)} \quad \boxed{1+4x}$$

#5) Simplify as fully as possible: $\frac{3x^2+1}{3x^2}$

no 'cancelling' possible
(can't factor anything out)
to form a 1

$$\boxed{\frac{3x^2+1}{3x^2}}$$

already
fully
simplified

#6) Simplify as fully as possible: $\frac{15x^2+18x}{18x}$

$$\frac{(\cancel{3}x)(5x+6)}{(\cancel{3}x)(6)} \quad \boxed{\frac{5x+6}{6}}$$

#7) Simplify as fully as possible: $\frac{3a^2b+4ab^2}{4ab^2}$

$$\frac{(\cancel{a}b)(3a+4b)}{(\cancel{a}b)(4b)} \quad \boxed{\frac{3a+4b}{4b}}$$

#8) Simplify as fully as possible: $\frac{2x^3 + 8x^2 + 4x}{4x}$

$$\frac{\cancel{2}x(x^2 + 4x + 2)}{\cancel{2}x(2)} \quad \boxed{\frac{x^2 + 4x + 2}{2}}$$

#9) Simplify as fully as possible: $\frac{6x^4 + 2x^3 - 2x^2 - 4x + 2x^3 + 8x^2 + 4x}{8x^2 + 8x - 8x^2 - 6x}$

combine like terms separately for numerator and denominator!

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

then factor: $\frac{(2x^2)(3x^2 + 2x + 3)}{(2x)(1)}$ only 2x in common so

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

$$\boxed{x(3x^2 + 2x + 3)}$$

$$\boxed{3x^3 + 2x^2 + 3x}$$

#10) Simplify as fully as possible: $\frac{9x^4 - 3x^3 - 3x - 3x^2 - 9x^4 + 6x^3 + 9x^2 + 3x}{4x^3 - 8x + 5x^2 + 8x}$

combine like terms!

$$\frac{3x^3 + 6x^2}{9x^2}$$

factor: $\frac{(3x^2)(x + 2)}{(3x^2)(3)}$

$$\boxed{\frac{x + 2}{3}}$$