

Difference of Two Squares

Starter

1. **(Review of last lesson)** Factorise $6x^2 - 5x - 4$.

2. **(Review of Y9 material)**

Expand and simplify these brackets. Write down what you notice.

(a) $(x - 3)(x + 3)$ (b) $(x + 6)(x - 6)$ (c) $(a - b)(a + b)$

3. Hence, **without showing any working**, factorise:

(a) $x^2 - 16$

(b) $x^2 - 25$

(c) $x^2 - \frac{1}{16}$

Notes

Difference of two squares: $a^2 - b^2 = (a + b)(a - b)$

“Difference” because we are subtracting

“two square” because a^2 and b^2 are square numbers

N.B. It could also be written $a^2 - b^2 = (a - b)(a + b)$

If you don't remember the difference of two squares expression you can also factorise using the method learnt in previous lessons as it is a quadratic expression.

E.g. 1 Factorise $x^2 - 49$.

Working: $x^2 - 49 = x^2 - 7^2 = (x - 7)(x + 7)$

E.g. 2 Factorise $64 - x^2$.

The two parts must be square numbers so the expression may need some manipulation.

E.g. 3 Factorise $9x^2 - 100$.

Working: $9x^2 - 100 = (3x)^2 - 10^2 = (3x - 10)(3x + 10)$

E.g. 4 Factorise $16a^2 - 49$.

Using the difference of 2 squares in calculations

The difference of 2 squares can be used to do calculations quickly.

E.g. 5 Find the value of $101^2 - 99^2$.

Working: $101^2 - 99^2 = (101 + 99)(101 - 99) = 200 \times 2 = 400$

E.g. 6 Find the value of $105^2 - 95^2$.

E.g. 7 Find the value of $57^2 - 43^2$.

Video: [Difference between two squares](#)

[Solutions to Starter and E.g.s](#)

Exercise

9-1 class textbook: p110 M4.9 Qu 1-26 (even), 27-38
A*-G class textbook: p100 E4.1 Qu 1-26 (even), 27-38
9-1 homework book: p39 M4.9 Qu 1-12 (odd), 13-15, 16-37 (odd)
A*-G homework book: p29 E4.1 Qu 1-12 (odd), 13-15, 16-27 (odd)

Summary

Difference of two squares: $a^2 - b^2 = (a + b)(a - b)$

It can also be used in calculations: $75^2 - 25^2 = (75 + 25)(75 - 25) = 100 \times 50 = 5000$

[Homework book answers \(only available during a lockdown\)](#)