



Factorising Quadratics (PDS)

Factorisation: Perfect Squares & Difference of Squares

Quadratic equations can be factorised and solved through identifying perfect squares and difference of squares.

Recall perfect square and difference of square trinomials:

$$1) (a + b)^2 = a^2 + 2ab + b^2$$

$$2) (a - b)^2 = a^2 - 2ab + b^2$$

$$3) (a + b)(a - b) = a^2 - b^2$$

EXAMPLE: Factorise and solve $x^2 + 6x + 9$

STEP ONE: Identify relevant formula. $(a + b)^2 = a^2 + 2ab + b^2$
All terms in the quadratic equation are positive.

STEP TWO: Identify if the equation fits the trinomial pattern
 x^2 and 9 are both perfect squares. $6x$ is twice the product of x and 3.

STEP THREE: Factorise.

Let $a = x$ and $b = 3 \rightarrow (a + b)^2 \rightarrow (x + 3)^2$

Instructions: Factorise the quadratics below.

1

$$x^2 + 4x + 4$$



2

$$x^2 - 8x + 16$$

3

$$x^2 - 36$$

4

$$x^2 + 14x + 49$$

5

$$x^2 - 144$$



6

$$4x^2 + 4x + 1$$

7

$$9x^2 + 6x + 1$$

8

$$25x^2 - 30x + 9$$

9

$$36x^2 - 49$$



10

$$x^4 - 25$$

11

$$4x^2 - 20x + 25$$

12

$$9x^2 + 15x + 25$$

13

$$81x^2 - 16$$



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STEP THREE: Factorise.

Let $a = x$ and $b = 3 \rightarrow (a + b)^2 \rightarrow (x + 3)^2$

Instructions: Factorise the quadratics below.

1

$$x^2 - 10x + 25$$



2

$$x^2 - 81$$

3

$$x^2 + 22x + 121$$

4

$$16x^2 + 8x + 1$$

5

$$9x^2 - 1$$



6

$$25x^2 - 60x + 36$$

7

$$81x^2 - 100$$

8

$$49x^2 - 84x + 44$$

9

$$25x^2 - 16$$



10

$$4x^4 + 36x^2 + 81$$

11

$$49x^4 - 70x^2 + 25$$

12

$$16x^2 + 24xy + 9y^2$$

13

$$64x^6 - 49y^2$$