



The National
Orthodox School
Shmaisani

Key answer

Name:

Worksheet(5)

Grade:8(A, B)

Subject: Factorising using Difference of two squares

Date :

Difference of Two Squares

Difference of two squares is a type of quadratic factorisation used when an algebraic expression is made up of a squared term subtracted from another squared term.

To factorise expressions in the form $a^2 - b^2$ we need **double brackets**.

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

Factorising

Expanding brackets



Factor Difference of Perfect Squares

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

Examples:

$$\begin{aligned} 16x^2 - 25 \\ &= (4x)^2 - 5^2 \\ &= (4x + 5)(4x - 5) \end{aligned}$$

$$\begin{aligned} 3x^2 - 75y^2 \\ &= 3(x^2 - 25y^2) \\ &= 3(x^2 - (5y)^2) \\ &= 3(x + 5y)(x - 5y) \end{aligned}$$

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Exercise (1): factorise each of the following expressions completely:

$$1 \quad u^2 - 64 = (u+8)(u-8)$$

$$2 \quad \frac{1}{9}x^2 - \frac{1}{25} = \left(\frac{1}{3}x + \frac{1}{5}\right)\left(\frac{1}{3}x - \frac{1}{5}\right)$$

$$3 \quad 36y^2 - 1 = (6y+1)(6y-1)$$

$$4 \quad v^4 - 625r^2 = (v^2 + 25r)(v^2 - 25r)$$

$$5 \quad a^2 - w^2z^2 = (a + wz)(a - wz)$$

$$6 \quad -16y^2 + 49 = 49 - 16y^2 = (7 + 4y)(7 - 4y)$$

$$7 \quad ab^2 - 100a$$

$$\star = a(b^2 - 100) \quad \text{H.c.F}$$

$$\star = a(b+10)(b-10)$$

$$8 \quad x - x^3$$

$$\star = x(1 - x^2) \quad \text{H.c.F}$$

$$\star = x(1+x)(1-x)$$

Exercise (2): factorise each of the following expressions completely:

1 $a^2 - 49$

$= (a + 7)(a - 7)$

2 $100 - w^2$

$= (10 + w)(10 - w)$

3 $9y^2 - 36$

~~$= 9(y^2 - 4)$~~ H.C.F

~~$= 9(y + 2)(y - 2)$~~

4 $x^2y^2 - 64$

$= (xy + 8)(xy - 8)$

5 $r^2 - 0.36m^2$

$= (r + 0.6m)(r - 0.6m)$

6 $24c^2 - 6$

~~$= 6(4c^2 - 1)$~~ H.C.F

$= 6(2c + 1)(2c - 1)$

7 $5y^3m - 45ym^3$

~~$= 5ym(y^2 - 9m^2)$~~
 $= 5ym(y + 3m)(y - 3m)$

8 $w^4 - k^4$

~~$= (w^2 + k^2)(w^2 - k^2)$~~
 $= (w^2 + k^2)(w + k)(w - k)$

9 $-y^2 + 144x^2 = 144x^2 - y^2$

$= (12x + y)(12x - y)$

10 $\frac{1}{16}y^2 - \frac{4}{9}$

$= (\frac{1}{4}y + \frac{2}{3})(\frac{1}{4}y - \frac{2}{3})$

11 $(xb^2 - x^3) + (y^2b^2 - y^2x^2)$

~~$= x(b^2 - x^2) + y^2(b^2 - x^2)$~~ Grouping

$(b^2 - x^2)(x + y^2)$

$= (b + x)(b - x)(x + y^2)$

Wisam Al - mashni