

Course: MFM2P Gr. 10 AppliedLesson: 6-8Unit: Quadratic ExpressionsTopic: Factoring Differences of Squares

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**# homework check: Lesson 6 - 7****# note: Factoring Differences of Squares**

A difference of squares is a polynomial where one square term is subtracted from another square term. The factors of a difference of squares are binomials with identical terms, but opposite operations. It is important to recognize a difference of squares in order to apply these ideas. For example, which of the following polynomials are differences of squares?

a)  $x^2 - 100$

This is a difference of squares because the squares

$$(x)^2 - (10)^2$$
 are separated by a subtraction sign

b)  $x^2 + 81$

This is not a difference of squares because the squares

$$(x)^2 + (9)^2$$
 are not separated by a subtraction sign

c)  $4x^2 - 25$

This is a difference of squares because the squares

$$(2x)^2 - (5)^2$$
 are separated by a subtraction sign

Which of the following factors represent a difference of square polynomial?

a)  $(x + 3)(x - 3)$

This represents a difference of squares polynomial since the factors are identical except for opposite signs

b)  $(x - 5)(x - 5)$

This is not a difference of squares because although the numbers are identical, the signs are not opposite.

c)  $(2x + 3)(2x - 3)$

This represents a difference of squares polynomial since the factors are identical except for opposite signs.

Factor each of the following polynomials.

$$\begin{aligned} a) \quad x^2 - 81 &= \\ &= (x)^2 - (9)^2 \\ &= (x - 9)(x + 9) \end{aligned}$$

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

$$\begin{aligned} c) \quad 64 - x^2 &= \\ &= (8)^2 - (x)^2 \\ &= (8 - x)(8 + x) \end{aligned}$$

**✚ homework assignment: Lesson 6 - 8**

**Lesson 6 – 8: Difference of Squares****Mark (/39): \_\_\_\_\_****1. Put a clear check mark beside the expressions that are differences of squares. (5 marks)**

- a)  $x^2 + 9$                       b)  $49 - x^2$                       c)  $4x^2 - 25$                       d)  $x^2 + 64$                       e)  $25 - x^2$

**2. Factor each difference of squares. (8 marks)**

- a)  $x^2 - 81 =$                       b)  $x^2 - 121 =$                       c)  $x^2 - 144 =$                       d)  $400 - x^2 =$

**3. A web page measured the area at  $A = x^2 - 49$ . (4 marks)****a) Factor the expression.****b) Find the actual area of the page if  $x = 25\text{cm}$ .****4. The area of the top of a classroom desk is represented by the expression  $100 - x^2$ . (8 marks)****a) Factor to find the length and width of the desk.****b) Find the actual dimensions of the desk if  $x = 4\text{cm}$ .****c) Calculate the actual area of the desk top.****d) Find the perimeter of the desk.**

**6. Explain why  $x^2 + 1$  is not a difference of squares, but  $x^2 - 1$  is a difference of squares.**

**7. Factor each completely. (9 marks)**

a)  $8x^2 - 18 =$

b)  $48x^2 - 27 =$

c)  $5x^2 - 45y^2 =$

**10. Factor  $2x^2 - 18 =$  . Is this a difference of squares? Why or why not? (3 marks)**