

Factoring Special Quadratics

Apr. 5/2016

1. Perfect Square Trinomial

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

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

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

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

Note:

- Standard methods, such as **alge-tiles** or **decomposition (SPI)** will also work, but may take longer.
- It is critical to check the **2ab** term to make sure you have a perfect square, or verify your final answer.

Mar 29-11:14 AM

Ex.1 Factor using a pattern (if possible)

$$(a) x^2 + 12x + 36$$

$$(x)^2 \quad (6)^2$$

$$= (x + 6)^2$$

possible pattern

$$(x + 6)^2$$

$$2ab = 2(x)(6)$$

$$= 12x \checkmark$$

$$(b) x^2 + 13x + 36$$

$$(x)^2 \quad (6)^2$$

$$= (x + 9)(x + 4)$$

(using SPI)

$$(x + 6)^2$$

$$2ab = 2(x)(6)$$

$$= 12x \times$$

$$(c) 4x^2 - 20x + 25$$

$$(2x)^2 \quad (5)^2$$

$$= (2x - 5)^2$$

$$(2x - 5)^2$$

$$2ab = 2(2x)(5)$$

$$= 20x \checkmark$$

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Assigned Work:

p. 230-231 # 3bc, 5, 6, 7, 10, 11, 14
 f a d

Mar 26-9:06 AM

$$\begin{aligned}
 7(f) \quad & \underbrace{(x+1)^2} + 2(x+1) + 1 && \text{let} \\
 & = a^2 + 2a + 1 && a = (x+1) \\
 & = (a+1)^2 && \text{check } 2(a)(1) \\
 & && = 2a \checkmark \\
 & = (1(x+1) + 1)^2 \\
 & = (x+1+1)^2 \\
 & = (x+2)^2
 \end{aligned}$$

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$$10(a) \quad x^4 - 12x^2 + 36 \quad \text{let } a = x^2$$

$$= a^2 - 12a + 36$$

$$= (a - 6)^2$$

$$= (x^2 - 6)^2$$

$$\text{check: } 2(a)(6)$$

$$= 12a \quad \checkmark$$

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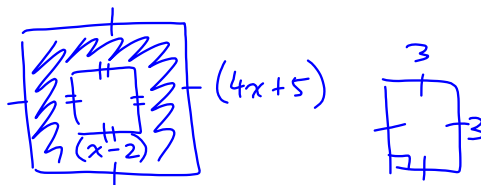
$$11(d) \quad 1 - 9a^2b^4$$

$$= (1)^2 - (3ab^2)^2$$

$$= (1 + 3ab^2)(1 - 3ab^2)$$

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14. (a)



$$A_{\text{shaded}} = A_{\text{outer}} - A_{\text{inner}}$$

$$\text{let } \quad = (4x+5)^2 - (x-2)^2$$

$$a = 4x+5$$

$$b = x-2$$

$$= a^2 - b^2$$

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

$$= ((4x+5) + (x-2))((4x+5) - (x-2))$$

$$= (5x+3)(3x+7)$$

$$= 15x^2 + 35x + 9x + 21$$

$$= 15x^2 + 44x + 21$$

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