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Factor:  $x^2 + 6x + 9 = (x+3)(x+3)$   
 $= (x+3)^2$

Mar 25-8:02 AM

Factor  $x^2 + 6x + 9$  algebraically

$= (x+3)(x+3)$   
 $= (x+3)^2$

S: 6  
P: 9  
I: 3, 3

Oct 30-11:08 PM

Factor:  $4x^2 - 12x + 9 = (2x-3)^2$  f

$(2x-3)(2x-3)$   
 $= 4x^2 - 6x - 6x + 9$

Mar 25-8:02 AM

Factor  $4x^2 - 12x + 9$  algebraically

$= 4x^2 - 6x - 6x + 9$

$= 2x(2x-3) - 3(2x-3)$

$= (2x-3)(2x-3)$

$= (2x-3)^2$

S : -12  
 P : 36  
 I : -6, -6

Oct 30-11:09 PM

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

$(5x)(5x)$        $(3)(3)$   
 $(5x - 3)^2$

$S : -30$   
 $P : 225$   
 $I : -15, -15$

	$5x$	$-3$
$5x$	$25x^2$	$-15x$
$-3$	$-15x$	$+9$

Mar 25-8:02 AM

### Factoring Special Quadratics

Oct 31/2011

#### 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)  $x^2 + 12x + 36$   
 $= (x + 6)^2$       check  
 $2(x)(6) = 12x \checkmark$

(b)  $x^2 + 13x + 36$   
 ~~$= (x + 6)^2$~~       check  
 $2(x)(6) = 12x \times$   
 $= (x + 9)(x + 4)$

(c)  $4x^2 - 20x + 25$   
 $= (2x - 5)^2$       check  
 $2(2x)(-5) = -20x \checkmark$

Mar 29-11:16 AM

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Factor:  $4x^2 - 9 = (2x - 3)(2x + 3)$  f

$x^2$	$x^2$	$\times$	$\times$	$\times$
$x^2$	$x^2$	$\times$	$\times$	$\times$
$x$	$x$	$-1$	$-1$	$-1$
$x$	$x$	$-1$	$-1$	$-1$
$x$	$x$	$-1$	$-1$	$-1$

Mar 25-8:02 AM

Factor  $4x^2 - 9$  algebraically

$$= 4x^2 - 6x + 6x - 9$$

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

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

$$\begin{array}{l} S \quad 0 \\ P \quad -36 \\ I \quad -6, 6 \end{array}$$

Oct 30-11:09 PM

Factor:  $9x^2 - 16 = (3x-4)(3x+4)$  f

Mar 25-8:02 AM

Factor  $9x^2 - 16$  algebraically

Oct 30-11:09 PM

## 2. Difference of Squares

$$\begin{aligned} a^2 - b^2 &= (a + b)(a - b) \\ &= (a - b)(a + b) \end{aligned} \quad \begin{array}{l} \text{(the order of the binomials} \\ \text{does not matter)} \end{array}$$

Ex.2 Factor

$$(a) \quad k^2 - 121 = (k + 11)(k - 11)$$

$$(b) \quad 81m^2 - 144 = (9m + 12)(9m - 12)$$

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Ex.3 Factor using a special pattern:

(a)  $25d^2 - 144$

(b)  $16x^2 + 24xy + 9y^2$

(c)  $18p^2q - 60pq + 50q$

(d)  $98a^2 - 32b^2$

Mar 26-8:24 AM

Assigned Work:

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

Mar 26-9:06 AM

10. (f)  $289x^6 - 81$

difference of squares?

$$= (17x^3)^2 - (9)^2$$

$$= (17x^3 - 9)(17x^3 + 9)$$

Nov 1-9:14 AM

10 (d)  $12x^2 - 60x + 75$

perfect square?

$$= 3(4x^2 - 20x + 25)$$

$$= 3(2x - 5)^2$$

check  
 $2(2x)(-5)$   
 $= -20x \checkmark$

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S -60  
P 900  
I -30, -30

$$12x^2 - 30x - 30x + 75$$

$$= 6x(2x - 5) - 15(2x - 5)$$

$$= (2x - 5)(6x - 15)$$

$$= (2x - 5)(3)(2x - 5)$$

$$= 3(2x - 5)^2$$

Nov 1-9:17 AM



$$\begin{aligned} 11(d) \quad & 1 - 9a^2b^4 \\ & = (1)^2 - (3ab^2)^2 \\ & = (1 - 3ab^2)(1 + 3ab^2) \end{aligned}$$

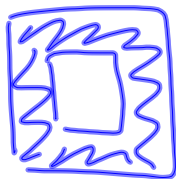
Nov 1-9:25 AM

$$\begin{aligned} 11(f) \quad & 50x^3 - 8xy^2 \\ & = \underline{2x} (25x^2 - 4y^2) \\ & = \underline{2x} (5x - 2y)(5x + 2y) \end{aligned}$$

Nov 1-9:26 AM

14(a)

$$A_{\text{big}} = (4x + 5)^2$$



$$A_{\text{small}} = (x - 2)^2$$

$$A_{\text{shaded}} = A_B - A_S$$

$$= \underbrace{(4x + 5)^2}_a - \underbrace{(x - 2)^2}_b$$

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

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

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

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

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

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

Nov 1-9:28 AM