

1.3 Factoring formulas

Difference of Squares

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

- Ex: $x^2 - 9$ $x^2 - 3^2$ $(x+3)(x-3)$

∴ $16x^2 - 49$ $(4x)^2 - 7^2$ $(4x+7)(4x-7)$

$36x^2 - 25y^2$

$$(6x+5y)(6x-5y)$$

Sum of cubes

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

difference of cubes

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

Ex: $x^3 - 125$ $(x-5)(x^2 + 5x + 25)$
 $x^3 - 5^3$

$$8y^3 + 1 \quad (2y)^3 + 1^3 = (2y+1)\left(\begin{matrix} (2y)^2 - 2y + 1 \\ (2y+1)(4y^2 - 2y + 1) \end{matrix}\right)$$

Factoring completely

① factor the GCF

② try a factoring formula

• Ex: $36x^2 - 81y^2$

$$9(4x^2 - 9y^2)$$

∴ $9(2x+3y)(2x-3y)$

∴ $3x^4 - 24x$ $3x(x^3 - 8)$
 $3x(x-2)(x^2+2x+4)$

Perfect Square Trinomial (1.4)

$$u^2 + 2uv + v^2 = (u+v)^2$$

$$u^2 - 2uv + v^2 = (u-v)^2$$

Ex: $9b^2 + 12b + 4$ ✓

(rewrite) $(3b)^2 + 2(3b)(2) + (2)^2$
 $u^2 + 2uv + v^2$

$$u = 3b$$

$$v = 2$$

$$(3b+2)^2$$

HW: p36 66-106 even
Odds Extra credit