

Factoring the sum and difference of cubes:

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

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

Example:

Factor  $27x^3 - 64y^3$

first re-write the problem as the difference of two cubes  $(3x)^3 - (4y)^3$  use the difference formula:

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

 $a = 3x$   $b = 4y$  now substitute the values into the formula

$$(3x)^3 - (4y)^3 = (3x - 4y)((3x)^2 + (3x)(4y) + (4y)^2)$$

Now simplify:

$$= (3x - 4y)(9x^2 + 12xy + 16y^2)$$

Factor each sum or difference of cubes completely. Don't forget to factor out GCF if necessary

1.  $8x^3 - 27$

5.  $x^3 + 64$

2.  $2x^3 + 54$

6.  $2x^3 - 250y^6$

3.  $4x^3 - 32y^9$

7.  $27x^3 + 64$

4.  $64x^3 - 1$

8.  $x^3 - 27c^3y^6$

Wk 10 block AA2 Factor sum and Difference of cubes

Name \_\_\_\_\_