TOPIC: SUM AND DIFFERENCE OF CUBES

Sum and Difference of Cubes

◆ The following products result in a sum or difference of cubes:

New

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

Name	Rule	Use if there are…	Example
Sum of Cubes	$a^3+b^3=(a\quad b)(a^2\quad ab+b^2)$	___ terms that are perfect _____	x^3+8 $=(\quad)^3+(\quad)^3$ $=(\quad+\quad)(\quad-\quad+\quad)$
Difference of Cubes	$a^3-b^3=(a\quad b)(a^2\quad ab+b^2)$		

◆ We can use this acronym to remember the **signs** within the factors: **S**ame, **O**pposite, **A**lways **P**ositive

EXAMPLE Factor completely.

$27y^3-1$

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PRACTICE Factor completely.

(*A*) $27x^3 + 125$

(*B*) $y^3 - \frac{1}{27}$

EXAMPLE Factor completely.

(*A*) $\frac{2}{3}x^3 - \frac{2}{3}y^3$

(*B*) $16x^3 + 54y^3$