

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 _____	$x^3 + 8$
Difference of Cubes	$a^3 - b^3 = (a \quad b)(a^2 \quad ab + b^2)$		$= (\quad)^3 + (\quad)^3$ $= (\quad + \quad)(\quad - \quad + \quad)$

- ◆ We can use this acronym to remember the **signs** within the factors:



Same, Opposite, Always Positive

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) $16x^3 + 54y^3$