

Name : \_\_\_\_\_

## Factors: Algebraic Identities

MS3

Factorize each expression using algebraic identities.

1)  $\frac{1}{p^3} - 27q^3$

2)  $g^3 - 216h^3$

3)  $729m^3 + 125$

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5)  $a^3b^4 + bc^3$

7)  $\frac{1}{x^3} - \frac{343}{y^3}$

9)  $3r^3s^3 + 3000$

10)  $\frac{1}{c^3} - 512$

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## Factors: Algebraic Identities

Factorize each expression using algebraic identities.

1)  $\frac{1}{p^3} - 27q^3$

$$\left(\frac{1}{p} - 3q\right)\left(\frac{1}{p^2} + \frac{3q}{p} + 9q^2\right)$$

2)  $g^3 - 216h^3$

$$(g - 6h)(g^2 + 6gh + 36h^2)$$

3)  $729m^3 + 125n^3$

$$(9m + 5n)(81m^2 - 45mn + 25n^2)$$

5)  $a^3b^4 + bc^3$

$$b(ab + c)(a^2b + b^2c + c^2a)$$

7)  $\frac{1}{x^3} - \frac{343}{y^3}$

$$\left(\frac{1}{x} - \frac{7}{y}\right)\left(\frac{1}{x^2} + \frac{7}{xy} + \frac{49}{y^2}\right)$$

9)  $3r^3s^3 + 3000$

$$3(rs + 10)(r^2s^2 - 10rs + 100)$$

10)  $\frac{1}{c^3} - 512$

$$\left(\frac{1}{c} - 8\right)\left(\frac{1}{c^2} + \frac{8}{c} + 64\right)$$

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