

$$a^4 - b^4 = (a - b) (a + b) (a^2 + b^2)$$

$$(a+b)^4 = a^4 + 4a^3b + 6a^2b^2 + 4ab^3 + b^4$$

$$(a-b)^4 = a^4 - 4a^3b + 6a^2b^2 - 4ab^3 + b^4$$

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

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

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

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

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