

$$1) x^2 - y^2 = (a+b)(a-b) = xyb = y \\ (x+y)(x-y)$$

$$2) 4x^2 - 81y^4 = (2x+9y^2)(2x-9y^2) \\ (2x+9x^2)$$

$$3) 27a^3 - 8b^6 = (3a-2b^2)(9a^2+6ab^2+4b^4)$$

$$4) 64m^3 + 125n^6 = 4 \times 4 \times 4 m^3 = \sqrt[3]{4} m^3 = \underline{\underline{4m}}$$

$$5) m^6 - 216 = (m^2 - 6)(m^4 + 6m^2 + 36)$$

$$6) 125x^3 + 1000y^6 = (5x)^3 + (10y^2)^3 \\ (5x+10y^2)(5x)^2 - (5x)(10y^2) + (10y^2)^2 + \\ (10y^2)^3 = 125(x+2y^2)(x^2 - 2xy^2 + 4y^4)$$

$$7) 100m^2 - 81h^2 = (10m)^2 - (9h)^2 = (10m + 9h)(10m - 9h)$$

$$8) 49a^2 - 36b^2 = (7a)^2 - (6b)^2 = (7a + 6b)(7a - 6b)$$