

Lesson 108: Sum & Difference of Two Cubes

Review: Difference of Two Squares

$$x^2 - y^2 = (x+y)(x-y)$$

$$\begin{aligned} 9x^2y^2 - 4p^2 \\ (3xy)^2 - (2p)^2 \\ (3xy + 2p)(3xy - 2p) \end{aligned}$$

Divide $a^3 + b^3$ by $a + b$

$$a+b \overline{) a^3 + 0a^2b + 0ab^2 + b^3}$$

$$\begin{aligned} x^3 + y^3 &= (x + y)(x^2 - xy + y^2) \\ x^3 - y^3 &= (x - y)(x^2 + xy + y^2) \end{aligned}$$

$$\begin{aligned} 1. \quad b^3c^3 - p^3 &= (bc)^3 - p^3 = \text{---} \\ &= (bc - p)(b^2c^2 + bcp + p^2) \end{aligned}$$

$$\begin{aligned} 2. \quad 8m^3y^6 + x^3 &= (2mp^2)^3 + x^3 \\ &= (2mp^2 + x)(4m^2p^4 - 2mp^2x + x^2) \end{aligned}$$

$$\begin{aligned} 3. \quad a^{12} + b^{12} &= (a^4)^3 + (b^4)^3 \\ &= (a^4 + b^4)(a^8 - a^4b^4 + b^8) \end{aligned}$$

$$\begin{aligned} a^{12} - \cancel{a^8b^4} + \cancel{a^4b^8} + \cancel{b^4a^8} - \cancel{b^8a^4} + b^{12} \\ a^{12} + b^{12} \end{aligned}$$