Identités

$(a+b)^2 = a^2 + 2ab + b^2$	$(a-b)^2 = a^2 - 2ab + b^2$
$(a+b)^3 = a^3 + 3a^2b + 3ab^2 + b^3$	$(a-b)^3 = a^3 - 3a^2b + 3ab^2 - b^3$
$\cancel{(a+b)^n = \binom{n}{0}a^n + \binom{n}{1}a^{n-1}b + \binom{n}{2}a^{n-2}b^2 + \dots + \binom{n}{k}a^{n-k}b^k + \dots + \binom{n}{n}b^n}$ ~~coefficients binomiaux $\binom{n}{k}$, voir page 7~~	
$a^2 - b^2 = (a-b)(a+b)$	$a^2 + b^2$ n'est pas factorisable dans les réels
$a^3 - b^3 = (a-b)(a^2 + ab + b^2)$	$a^3 + b^3 = (a+b)(a^2 - ab + b^2)$
$\cancel{a^n - b^n = (a-b)(a^{n-1} + a^{n-2}b + \dots + ab^{n-2} + b^{n-1})}$	
$\cancel{(a+b+c)^2 = a^2 + b^2 + c^2 + 2ab + 2bc + 2ac}$	

$$x^2 - 4x + 3 = (x-1)(x-3)$$

$$m \cdot n = 3$$

$$m + n = -4$$

$$= 4(z + 1/4)(z + 1)$$

$$4z^2 + 5z + 1 = (4z + 1)(z + 1)$$

$$4z^2 = 4z \cdot z$$

$$= 2z \cdot 2z$$

$$\cancel{(2z+2)(2z+1)}$$

$$ax^2+bx+c=0 \iff x=\frac{-b\pm\sqrt{b^2-4ac}}{2a}$$

$$x_1, x_2 \text{ zeros} \iff a(x-x_1)(x-x_2)=ax^2+bx+c$$

$$4z^2+5+1=0$$

$$z=\frac{-5\pm\sqrt{25-16}}{8}$$

$$\frac{-5+3}{8}=-\frac{1}{4}$$

$$-1$$

$$4\cdot(z+1/4)\cdot(z+1)$$

$$4z^2+5z+1 =$$

$$4\left(z^2+\frac{5}{4}z+\frac{1}{4}\right) =$$

$$4\left(z^2+2\cdot z\cdot\frac{5}{8}+\frac{25}{64}-\frac{25}{64}+\frac{1}{4}\right) =$$

$$4\left(\left(z+\frac{5}{8}\right)^2-\left(\frac{25}{64}-\frac{1}{4}\right)\right) =$$

$$4\left(\left(z+\frac{5}{8}\right)^2-\left(\frac{3}{8}\right)^2\right) =$$

$$4\left(z+\frac{5}{8}+\frac{3}{8}\right)\left(z+\frac{5}{8}-\frac{3}{8}\right) = 4(z+1)\left(z+\frac{1}{4}\right)$$

$$x^{12} - 125 = (x^4)^3 - 5^3 = A^3 - B^3$$

$$A = x^4$$

$$B = 5$$

$$= (x^4 - 5)\left((x^4)^2 + 5x^4 + 25\right)$$

$$= \left(x^2 - \sqrt{5}\right)\left(x^2 + \sqrt{5}\right)\left(x^8 + 5x^4 + 25\right)$$

$$= \left(x + \sqrt[4]{5}\right)\left(x - \sqrt[4]{5}\right)\left(x^2 + \sqrt{5}\right)\left(x^8 + 5x^4 + 25\right)$$

$$x^{12} - 125 = \left(x^6 - \sqrt{125}\right)\left(x^6 + \sqrt{125}\right)$$

$$= \left(x^6 - 5\sqrt{5}\right)\left(x^6 + 5\sqrt{5}\right)$$

$$= \left(x^3 - \sqrt[4]{125}\right)\left(x^3 + \sqrt[4]{125}\right) \cdot$$

$$\left(x^2 + \sqrt[3]{5\sqrt{5}}\right)\left(x^4 + \cdot \ \_\_\_ \right)$$

$$A - xA + A^2 =$$

$$A(1 - x + A)$$

$$(z^3)^2 + 19z^3 - 216$$

$y = z^3$

$$y^2 + 19y - 216$$

$z^3 = y$

$$(y-8)(y+27)$$

$6 \cdot 6 \cdot 6$

$3 \cdot 3 \cdot 3 \cdot 8$

$3 \cdot 3 \cdot 24$

$$\boxed{27 \cdot 8}$$