

A binomial in the form $a^3 + b^3$ can be factored as $(a + b)(a^2 - ab + b^2)$.

$$27x^3 + 125 = (3x)^3 + 5^3 = (3x + 5)((3x)^2 - 3x \cdot 5 + 5^2) = \\ (3x + 5)(9x^2 - 15x + 25)$$