- $(a + b)^2 + (a - b)^2 = 2(a^2 + b^2)$
- $(a + b)^2 - (a - b)^2 = 4ab$
- $(a + b + c)^2 = a^2 + b^2 + c^2 + 2ab + 2bc + 2ca$
- $(a + b)^3 = a^3 + 3ab(a + b) + b^3$
- $(a - b)^3 = a^3 - 3ab(a - b) - b^3$
- $a^3 \pm b^3 = (a \pm b)(a^2 \pm ab + b^2)$
- $(a + b + c)^2 = a^2 + b^2 + c^2 + 2ab + 2bc + 2ca$
- $(x^2 + y^2)(x^4 - x^2y^2 + y^4)$
- $(x^3 - y^3)(x^6 + x^3y^3 + y^6)$
- $(x - y)(x + y)(x^2 + y^2)(x^2 + xy + y^2)(x^2 - xy + y^2)(x^4 - x^2y^2 + y^4)$
- $2x^2 - 1)(2x^2 + 1)(4x^4 + 2x^2 + 1)(4x^4 - 2x^2 + 1)$
- P(x) = anxn + an-1xn-1 + an-2xn-2 + …+ a1x + a0, an ≠ 0

  $(\sqrt{a}+\sqrt{b})$ and $(\sqrt{a}-\sqrt{b})$ are conjugate surds of each other.

  The conjugate of $x+\sqrt{y}$ is $x-\sqrt{y}$.

  The product of the conjugate surds $\sqrt{a}+\sqrt{b}$ and $\sqrt{a}-\sqrt{b}$,

  $(\sqrt{a}+\sqrt{b})(\sqrt{a}-\sqrt{b}) = (\sqrt{a})^2 - (\sqrt{b})^2 = a - b,$

  is a rational quantity independent of any radical.

  Similarly, the product of $a+b\sqrt{m}$ and its conjugate $a-b\sqrt{m}$ has no radical. For example,
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Rationalizing Real Numbers of the Types $\frac{1}{a+b\sqrt{x}}$, $\frac{1}{\sqrt{x}+\sqrt{y}}$

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