

解方程与根式

In[]:= **Solve**[x^3 + 3 x - 5 == 0, x]

[解方程](#)

Out[]:=

$\left\{ \left\{ x \rightarrow 1.15\dots \right\}, \left\{ x \rightarrow -0.577\dots - 2.00\dots i \right\}, \left\{ x \rightarrow -0.577\dots + 2.00\dots i \right\} \right\}$

In[]:= **Solve**[x^3 + 3 x - 5 == 0, x, Cubics -> True]

[解方程](#)

[三次显式](#) [真](#)

Out[]:=

$$\left\{ \left\{ x \rightarrow -\left(\frac{2}{5 + \sqrt{29}} \right)^{1/3} + \left(\frac{1}{2} (5 + \sqrt{29}) \right)^{1/3} \right\}, \right. \\ \left\{ x \rightarrow -\frac{1}{2} (1 + i \sqrt{3}) \left(\frac{1}{2} (5 + \sqrt{29}) \right)^{1/3} + \frac{1 - i \sqrt{3}}{2^{2/3} (5 + \sqrt{29})^{1/3}} \right\}, \\ \left. \left\{ x \rightarrow -\frac{1}{2} (1 - i \sqrt{3}) \left(\frac{1}{2} (5 + \sqrt{29}) \right)^{1/3} + \frac{1 + i \sqrt{3}}{2^{2/3} (5 + \sqrt{29})^{1/3}} \right\} \right\}$$

In[]:= **Solve**[x^3 + 3 x - 5 == 0, x] // ToRadicals

[解方程](#)

[转换为根式](#)

Out[]:=

$$\left\{ \left\{ x \rightarrow -\left(\frac{2}{5 + \sqrt{29}} \right)^{1/3} + \left(\frac{1}{2} (5 + \sqrt{29}) \right)^{1/3} \right\}, \right. \\ \left\{ x \rightarrow -\frac{1}{2} (1 + i \sqrt{3}) \left(\frac{1}{2} (5 + \sqrt{29}) \right)^{1/3} + \frac{1 - i \sqrt{3}}{2^{2/3} (5 + \sqrt{29})^{1/3}} \right\}, \\ \left. \left\{ x \rightarrow -\frac{1}{2} (1 - i \sqrt{3}) \left(\frac{1}{2} (5 + \sqrt{29}) \right)^{1/3} + \frac{1 + i \sqrt{3}}{2^{2/3} (5 + \sqrt{29})^{1/3}} \right\} \right\}$$