

Solutions to $x^3 + ax^2 + bx + c = 0$:

$$\begin{aligned}
r_1 &= \sqrt[3]{-\frac{1}{2} \left(\frac{2a^3}{27} - \frac{ab}{3} + c \right) + \sqrt{\frac{1}{27} \left(b - \frac{a^2}{3} \right)^3 + \frac{1}{4} \left(\frac{2a^3}{27} - \frac{ab}{3} + c \right)^2}} \\
&+ \sqrt[3]{-\frac{1}{2} \left(\frac{2a^3}{27} - \frac{ab}{3} + c \right) - \sqrt{\frac{1}{27} \left(b - \frac{a^2}{3} \right)^3 + \frac{1}{4} \left(\frac{2a^3}{27} - \frac{ab}{3} + c \right)^2}} - \frac{a}{3} \\
r_2 &= \left(i \frac{\sqrt{3}}{2} - \frac{1}{2} \right) \sqrt[3]{-\frac{1}{2} \left(\frac{2a^3}{27} - \frac{ab}{3} + c \right) + \sqrt{\frac{1}{27} \left(b - \frac{a^2}{3} \right)^3 + \frac{1}{4} \left(\frac{2a^3}{27} - \frac{ab}{3} + c \right)^2}} \\
&+ \left(i \frac{\sqrt{3}}{2} - \frac{1}{2} \right)^2 \sqrt[3]{-\frac{1}{2} \left(\frac{2a^3}{27} - \frac{ab}{3} + c \right) - \sqrt{\frac{1}{27} \left(b - \frac{a^2}{3} \right)^3 + \frac{1}{4} \left(\frac{2a^3}{27} - \frac{ab}{3} + c \right)^2}} - \frac{a}{3} \\
r_3 &= \left(i \frac{\sqrt{3}}{2} - \frac{1}{2} \right)^2 \sqrt[3]{-\frac{1}{2} \left(\frac{2a^3}{27} - \frac{ab}{3} + c \right) + \sqrt{\frac{1}{27} \left(b - \frac{a^2}{3} \right)^3 + \frac{1}{4} \left(\frac{2a^3}{27} - \frac{ab}{3} + c \right)^2}} \\
&+ \left(i \frac{\sqrt{3}}{2} - \frac{1}{2} \right) \sqrt[3]{-\frac{1}{2} \left(\frac{2a^3}{27} - \frac{ab}{3} + c \right) - \sqrt{\frac{1}{27} \left(b - \frac{a^2}{3} \right)^3 + \frac{1}{4} \left(\frac{2a^3}{27} - \frac{ab}{3} + c \right)^2}} - \frac{a}{3}
\end{aligned}$$