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9. $x^n - a = 0$.

Binomial algebraic equation.

Solutions:

$$x_{k+1} = a^{1/n} \left(\cos \frac{2k\pi}{n} + i \sin \frac{2k\pi}{n} \right) \quad \text{if } a > 0,$$
$$x_{k+1} = |a|^{1/n} \left(\cos \frac{(2k+1)\pi}{n} + i \sin \frac{(2k+1)\pi}{n} \right) \quad \text{if } a < 0,$$

where $k = 0, 1, \dots, n-1$, and $i^2 = -1$.

References

- Korn, G. A. and Korn, T. M.**, *Mathematical Handbook for Scientists and Engineers, Second Edition*, Dover, New York, 2000.
- Bronshstein, I.N. and Semendyayev, K.A.**, *Handbook of Mathematics, 4th Edition*, Springer-Verlag, Berlin, 2004.

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