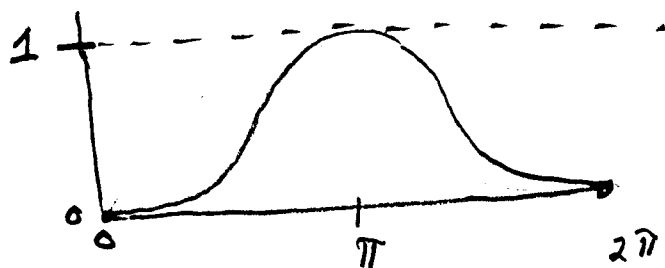


DLN 1.2.6

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The function $(1/2) - (1/2) \cos \phi$ has the graph



Relation is
two to one.

Therefore, for $x_0 \in [0, 1]$, the equation

$$x_0 = (1/2) - (1/2) \cos \phi_0$$

has a unique solution satisfying $\phi_0 \in [0, \pi]$.

If we write

$$x_n = (1/2) - (1/2) \cos (2^n \phi_0),$$

then we have

$$x_{n+1} = (1/2) - (1/2) \cos (2^{n+1} \phi_0)$$

$$= (1/2) - (1/2) [\cos^2 (2^n \phi_0) - \sin^2 (2^n \phi_0)]$$

$$= (1/2) - (1/2) [2 \cos^2 (2^n \phi_0) - 1]$$

$$= 1 - \cos^2 (2^n \phi_0)$$

$$= [1 - \cos (2^n \phi_0)] [1 + \cos (2^n \phi_0)] \Rightarrow$$