

Formula of Compound interest

P : deposit

r : rate of compound monthly interest

$$\text{after 1 month} = P + \frac{r}{12} P = \left(1 + \frac{r}{12}\right) P$$

$$\begin{aligned} \text{2 months} &= \left(1 + \frac{r}{12}\right) P + \frac{r}{12} \left(1 + \frac{r}{12}\right) P \\ &= P \left(1 + \frac{r}{12}\right)^2 \end{aligned}$$

$$\begin{aligned} \text{after 1 year} &= P \left(1 + \frac{r}{12}\right)^{12} \\ \text{+ years } t &= P \left(1 + \frac{r}{12}\right)^{12t} \end{aligned}$$

In general

$$V(t) = P \left(1 + \frac{r}{m}\right)^{mt}$$

$m = 1$

Compounded

yearly

$m = 12$

"

monthly

$m = 365$

daily

Ex

How long will it take to double a capital attracting interest 6% compounded daily