

$$C = \frac{r \cdot (1 + r)^N}{(1 + r)^N - 1}$$

$$P_n = \frac{(1 + r)^N - (1 + r)^n}{(1 + r)^N - 1}$$

$$I_n = \frac{n \cdot r \cdot (1 + r)^N - (1 + r)^n + 1}{(1 + r)^N - 1}$$