(12) $A = P\left(1+\frac{r}{n}\right)^{nt}$

$P = 2000$
$t = 2$
$r = .03$
$n = 12$
$A = ?$

$A = 2000\left(1+\frac{.03}{12}\right)^{12\times 2}$

$= 2000\left(1+\frac{.03}{12}\right)^{24}$

$= 2123.51$

(13) $A = P\left(1+\frac{r}{n}\right)^{nt}$

$n = 4$
$A = 5000$
$t = 5$
$r = .04$
$P = ?$

$5000 = P\left(1+\frac{.04}{4}\right)^{4\times 5}$

$5000 = P\left(1+\frac{.04}{4}\right)^{20}$

$\frac{5000}{\left(1+\frac{.04}{4}\right)^{20}} = \frac{P\left(1+\frac{.04}{4}\right)^{20}}{\left(1+\frac{.04}{4}\right)^{20}}$

$4097.72 = P$

(14) $A = P\left(1+\frac{r}{n}\right)^{nt}$

$n = 365$
$A = 6000$
$P = 5500$
$r = .072$
$t = ?$

$6000 = 5500\left(1+\frac{.072}{365}\right)^{365t}$

$\frac{6000}{5500} = \left(1+\frac{.072}{365}\right)^{365t}$

$\ln\left(\frac{6000}{5500}\right) = \ln\left(1+\frac{.072}{365}\right)^{365t}$

$\ln\left(\frac{6000}{5500}\right) = 365t\,\ln\left(1+\frac{.072}{365}\right)$

$\frac{\ln\left(\frac{6000}{5500}\right)}{365\ln\left(1+\frac{.072}{365}\right)} = t$

$t = 1.21$

(15) $A = P\left(1+\frac{r}{n}\right)^{nt}$

$n = 2$
$A = 7000$
$P = 5000$
$t = 30$
$r = ?$

$7000 = 5000\left(1+\frac{r}{2}\right)^{2\times 30}$

$7000 = 5000\left(1+\frac{r}{2}\right)^{60}$

$\frac{7000}{5000} = \left(1+\frac{r}{2}\right)^{60}$

$\left(\frac{7000}{5000}\right)^{\frac{1}{60}} = \left[\left(1+\frac{r}{2}\right)^{60}\right]^{\frac{1}{60}}$

$\left(\frac{7000}{5000}\right)^{\frac{1}{60}} = 1+\frac{r}{2}$

$2\left(\frac{7000}{5000}\right)^{\frac{1}{60}} = 2(1)+2\left(\frac{r}{2}\right)$

$2\left(\frac{7000}{5000}\right)^{\frac{1}{60}} = 2+r$

$r = 2\left(\frac{7000}{5000}\right)^{\frac{1}{60}} - 2$

$r = .0112$
or
$= 1.12\%$