If you deposit \$4000 into an account paying 6% annual interest compounded quarterly, how much money will be in the account after 5 years?

$A=P\left(1+\frac{r}{n}\right)^{nt}$ $A=?$ $P=4000$ $r=6\%\to 0.06$ $n=4$ $t=5$

$A=4000\left(1+\frac{0.06}{4}\right)^{(4)(5)}=$ **\$5,387.42**

If you deposit \$6500 into an account paying 8% annual interest compounded monthly, how much money will be in the account after 7 years?

$A=P\left(1+\frac{r}{n}\right)^{nt}$ $A=?$ $P=6500$ $r=8\%\to .08$ $n=12$ $t=7$

$A=6500\left(1+\frac{.08}{12}\right)^{(12)(7)}=$ **\$11358.24**

How much money would you need to deposit today at 5% annual interest compounded weekly to have \$20000 in the account after 9 years?

$A=P\left(1+\frac{r}{n}\right)^{nt}$ $A=20000$ $P=?$ $r=5\%\to r=.05$ $n=52$ $t=9$

$20000=P\left(1+\frac{.05}{52}\right)^{(52)(9)}$

$\frac{20000}{1.568}=\frac{P(1.568)}{(1.568)}$

$P\approx\$12755.10$

How much money would you need to deposit today at 9% annual interest compounded monthly to have \$12000 in the account after 6 years?

$A=P\left(1+\frac{r}{n}\right)^{nt}$ $A=12000$ $P=?$ $r=9\%\to 0.09$ $n=12$ $t=6$

$12000=P\left(1+\frac{.09}{12}\right)^{(12)(6)}$

$\frac{12000}{1.713}=\frac{P(1.713)}{1.713}$ → **$P\approx 7005.25$**

How much money, invested at an interest rate of r% per year compounded continuously, will amount to A dollars after t years? A = 6000, r = 6.1, t = 14.

P?   6.1 → .061

$A=Pe^{rt}\to 6000=Pe^{(.061)14}$

$\frac{6000}{2.349}=\frac{P(2.349)}{2.349}$ → **$P=\$2554.25$**

You decide to invest $8000 for 6 years and you have a choice between two accounts. The first pays 7% per year, compounded monthly. The second pays 6.85% per year, compounded continuously. Which is the better investment?

Account 1

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

$A = ?$ $r = 7\% \rightarrow .07$

$P = 8000$ $n = 12$ $t = 6$

$A = 8000(1 + \frac{.07}{12})^{(12)(6)}$

$A \approx 12160.84$

Account 2

$A = Pe^{rt}$ $r = 6.85\% \rightarrow .0685$

$A = ?$ $t = 6$

$P = 8000$

$A = 8000e^{(.0685)(6)}$

$A \approx 12066.60$

You receive a $5000 gift which you want to invest for 3 years. Should you choose an investment paying 4.5% interest compounded monthly or one paying 4.25% interest compounded continuously?

Investment One

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

$A = ?$ $n = 12$

$P = 5000$ $t = 3$

$r = 4.5\% \rightarrow .045$

$A = 5000(1 + \frac{.045}{12})^{(12)(3)}$

$A \approx 5721.24$

Investment Two

$A = Pe^{rt}$ $t = 3$

$A = ?$

$P = 5000$

$r = 4.25\% \rightarrow .0425$

$A = 5000e^{(.0425)(3)}$

$A \approx 5679.92$

How much should you invest at 4.8% compounded continuously to have $5000 in 2.5 years?

$A = Pe^{rt}$ $t = 2.5$

$A = 5000$

$r = 4.8\% \rightarrow .048$

$5000 = Pe^{(.048)(2.5)}$

$\frac{5000}{1.127} = \frac{P(1.127)}{1.127}$

$P \approx \$4436.56$

Write a formula for the amount if interest you would receive on any amount invested and compounded continuously.

$A = Pe^{rt} - P$

$A = P(e^{rt} - 1)$