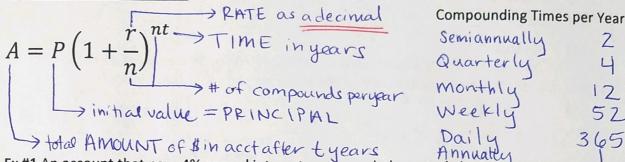
24.2 (Part 2) Interest Formulas

Compound Interest Formula



Ex #1 An account that pays 4% annual interest compounded quarterly has an initial investment of \$3000. How much money will be in the account after three years?

$$r = 0.04$$
 $h = P(1 + \frac{1}{11})^{n}$
 $h = 3000 (1 + \frac{0.04}{4})^{(4)}$
 $h = 3000 (1 + \frac{0.04}{4})^{(4)}$
 $h = 3380.47509.3959$
 $h = 3380.47509.3959$

Ex #2 How long would it take an investment of \$5000 to earn \$1000 interest if it is invested in a savings account that pays 3.75% annual interest compounded monthly?

$$t = ??$$
 $A = P(1 + \frac{r}{n})^{nt}$
 $P = 5000$
 $\frac{6000}{5000} = \frac{5000}{5000}(1 + \frac{0.0375}{12})^{12}t$
 $A = 6600$
 $1.2 = 1.003125$
 $1.2 = 12t$
 $1.2 = 1.869500962$
 $1.3 = 1.3 = 1.3$
 $1.3 = 1.3 = 1.3$

Ex #3 A deposit of \$1000 is made into a savings account that pays 4% annual interest compounded monthly.

a) How much money will be in the account after 6 years? P = 1000 $A = P(1 + \frac{1}{12})^{n+1} = 1000 (1 + \frac{04}{12})^{12} (6) = 1270.7418790791$ P = 1000 P = 1000

a) How much would she have if the interest is compounded yearly?

P=7500 A=7500(1+ $\frac{1}{12}$)(1)

H= 12

H= 8400

h= (b) How much would she have if the interest is compounded daily? P=7500 $A = 7500(1 + \frac{12}{365})365(1)$ Y= .12 A = 8456.059617288

n=365

\$8456.06

Continually Compounded Interest Formula A = Pert > TIME inyears button on calculator & 2.7 PRINCIPAL AMOUNT/total Ex #5 An account that pays 4% annual interest compounded continuously has an initial investment of \$3000. How much money will be in the account after three years? A=Pert .04(3) A=3000e r=.04 \$ 3382.49 P = 3000 +=3 A = 3382, 4905547381 A = 77 Ex #6 How long would it take an investment of \$5000 to earn \$1000 interest if it is invested in a savings account that pays 3.75% annual interest compounded continuously? .0375+ = 0.1823215568 t=77 Y = 5000 A = 6000 C = 5000 C = 5000P=5000 t= 4.862 years en 1.2 = .0375 t Ex #7 If \$4000 is invested at 7% interest per year compounded continuously, how long will it take to double the original investment? 8000 =4000e 9.902 years 7 = e .07t lu 2 = .07 t t = _______ Ex #8 A deposit of \$4000 is made into a savings account that pays 2.48% annual interest compounded quarterly a) How much money will be in the account after three years? $A = 4000 \left(1 + \frac{3248}{4} \right)$ \$ 4307.96 A=4307. 9608435887 b) How long will it take for the account to earn \$500 interest? 4500 = 4000 (1+ · 0248) 4t $4t = \log_{1.0062} 1.125 \rightarrow t = \frac{\log_{1.0062} 1.125}{4}$ c) How much more money will be in the account after three years if the interest is compounded continuously? A =4000 e .0248(3) \$ 4308.95 A = 4308.9504574978