Financial Mathematics

Please NOTE: $i = \frac{r}{m}$ *and* $n = mt$ *where* $r = $ *interest rate expressed as a decimal and* $m = $ *number of compoundings per year* $t = $ *time in years*	
Simple Interest	$I = Prt \quad with \ S = P + I$
Periodic Compounding	$S = P(1+i)^n = P\left(1+\frac{r}{m}\right)^{mt}$
Continuous Compounding	$S = Pe^{rt}$
Annual Percentage Yield	$APY = (1+i)^m - 1 = \left(1+\frac{r}{m}\right)^m - 1$
Continuous Compounding	$APY = e^r - 1$
Future Value of an Ordinary Annuity	$S = R\left[\frac{(1+i)^n - 1}{i}\right]$
Future Value of an Annuity Due	$S = R\left[\frac{(1+i)^n - 1}{i}\right](1+i)$
Present Value of an Ordinary Annuity (payments made at end)	$A = R\left[\frac{1-(1+i)^{-n}}{i}\right]$
Present Value of an Ordinary Annuity (Payments made at the beginning)	$A = R\left[\frac{1-(1+i)^{-n}}{i}\right](1+i)$
Present Value of a Deferred Annuity (Deferred for k periods)	$A = R\left[\frac{1-(1+i)^{-n}}{i}\right](1+i)^{-k}$