### PRECALC FORMULAS **APPLICATIONS OF EXPONENTIAL FUNCTIONS**

#### **Compound Interest** Exponential Growth (Business/Human Pop.) A = final amount $A = P\left(1 + \frac{r}{n}\right)^{nt}$ N =final Amount $N = N_0 \left(1 \pm r\right)^t$ P = principal $N_o =$ initial Amount r = interest rate r = growth/decay raten = number of times t = timeCompounded continuously compounded in a year $A = Pe^{rt}$ t = time

#### **Continuous Growth** (Nature) Newton's Law of Cooling $u = T + (u_0 - T)e^{kt}$ u = final temperature of object $N = N_o e^{kt}$ N =final amount $u_0$ = initial temperature of object $N_0$ = initial amount T = temperature of surrounding air k = constant of growth/decayk = rate of coolingt = timet = time

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# **Compound Interest**

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 $N = N_0 \left(1 \pm r\right)^t$ 

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# **Continuous Growth** (Nature)

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### **Newton's Law of Cooling**

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	$u_0 = $ initial temperature of object
	T = temperature of surrounding air
	k = rate of cooling
	t = time