Math 103 Formula Sheet

Financial Management

Simple Interest:	$I = Prt$	Future Value for Simple Interest:	$A = P(1 + rt)$
Future Value for Compound Interest:	$A = P\left(1 + \frac{r}{n}\right)^{nt}$	Present Value for Compound Interest:	$P = \frac{A}{\left(1 + \frac{r}{n}\right)^{nt}}$
Future Value for continuous compounding:	$A = Pe^{rt}$	Annual Yield (effective simple interest rate):	$Y = \left(1 + \frac{r}{n}\right)^{n} - 1$
Future Value of an Annuity (P is the amount of each deposit):	$A = \frac{P\left[\left(1 + \frac{r}{n}\right)^{nt} - 1\right]}{\left(\frac{r}{n}\right)}$	Periodic deposits for an Annuity (A is the amount of the annuity)	$P = \frac{A\left(\frac{r}{n}\right)}{\left[\left(1 + \frac{r}{n}\right)^{nt} - 1\right]}$
Periodic Mortgage Payments (P is the amount of mortgage):	$PMT = \frac{P\left(\frac{r}{n}\right)}{\left[1 - \left(1 + \frac{r}{n}\right)^{-nt}\right]}$		

Probability and Counting Rules

Permutation rule	${}_nP_r = \frac{n!}{(n-r)!}$	Combination rule:	${}_nC_r = \frac{n!}{(n-r)!\,r!}$

$P(\text{not } E) = 1 - P(E)$
$P(A \text{ or } B) = P(A) + P(B)$
$P(A \text{ and } B) = P(A) \cdot P(B)$
$P(B|A) = \frac{n(B \cap A)}{N(A)} = \frac{\text{number of outcomes common to B and A}}{\text{number of outcomes in A}}$

$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$

Statistics

Mean for the individual data:	$\overline{X} = \frac{\sum X}{n}$	Mean for grouped data:	$\overline{X} = \frac{\sum (f \cdot X)}{n}$
Standard Deviation	$s = \sqrt{\frac{\sum (\text{data item} - \text{mean})^2}{n-1}}$	Z-score:	$z = \frac{\text{data item} - \text{mean}}{\text{standard deviation}}$