MATH 205 FG Formula List for Test 2 on Chapters 4, 5, 6
Fall 2008 Dr. Fenton

PROBABILITY

P(an event) = the sum of the probabilities of its individual outcomes

P(an event happening) = 1 - (the event not happening)

For independent events, P(both A and B happening) = P(A) · P(B)

In the situation of equally likely outcomes, P(event A) = $\dfrac{\text{number of ways A can happen}}{\text{total number of outcomes that can happen}}$

DISCRETE PROBABILITY DISTRIBUTIONS

$$\mu = \sum x_i \cdot p_i$$

$$\sigma^2 = \sum (x_i - \mu)^2 \cdot p_i \text{ and } \sigma = \sqrt{\sigma^2}$$

These can be done more easily by the **1-Var Stats** command on the calculator.

BINOMIAL DISTRIBUTION B(n,p)

For counts, $\mu = n \cdot p$ and $\sigma = \sqrt{n \cdot p \cdot (1-p)}$

For proportions, $\mu = p$ and $\sigma = \sqrt{\dfrac{p \cdot (1-p)}{n}}$.

The relevant calculator commands are **binompdf** and **binomcdf**.

SAMPLING DISTRIBUTIONS

$\mu_{\text{samples}} = \mu$ of the population and $\sigma_{\text{samples}} = \dfrac{\sigma}{\sqrt{n}}$.

Most calculations involve the command **normalcdf**.

CONFIDENCE INTERVALS

The interval estimate is $\overline{x} \pm z^* \dfrac{\sigma}{\sqrt{n}}$. This can be done more easily on the calculator by the **ZInterval** command.

Sample size $n = \left(\dfrac{z^* \sigma}{\text{margin}} \right)^2$

HYPOTHESIS TESTING

On the calculator, use **Z-Test**. Give values for $\mu_0, \sigma, \overline{x}$, and n, and choose the alternative hypothesis.