

MTH 1210 Final Exam Topics to Supplement Exam I, II, and III Topics (The Final Exam is cumulative -- it covers material from the entire semester). In addition to the material listed in the study guides for Exams I, II, and III, the Final Exam will also cover material in Class Notes 19-23, Homeworks 9 and 10, and Sections 10.1, 10.3, 10.5, and 14.1-14.4 in the book. Final Exam problems will be similar to examples and exercises done in class, homework problems, and sample exam problems.

In addition to the material covered on the first three exams, the following topics will also be covered on the Final Exam.

**Two-mean  $t$  test for two population means  $\mu_1$  and  $\mu_2$ :**

Know when to use it (i.e. when you have two independent samples from two populations and you want to test for a difference between the population means  $\mu_1$  and  $\mu_2$ ).

Know how to carry out the test by following the **six steps** given in **Slides 17**. You will be **given** the degrees of freedom.

**Paired samples  $t$  test:**

Know when to use it (i.e. when you have two **paired** samples from two populations and you want to test for a difference between the population means  $\mu_1$  and  $\mu_2$ ).

Know how to carry out the test by following the **six steps** given in **Slides 17**.

**Bivariate data and relationships between two variables:**

**Scatterplots**

Know how to make them

Know how to interpret them and what to look for

**Correlation**

Know what  $r$  measures

Know the various properties of  $r$

Know the cautions about correlation:

It's not resistant to outliers

Strong correlations don't imply cause/effect relationships

It's not appropriate when the relationship between  $x$  and  $y$  isn't linear

**Least squares regression**

Know how to use the **equation** of a regression line to **predict** a  $y$  value for a given  $x$  value

Know how to **interpret** the **slope**  $b_1$  of a regression line

Know how to compute and interpret **errors** in regression

Know what **extrapolation** is and that it can lead to faulty  $y$  value predictions

Know that **influential** outliers are ones that affect the slope of the regression line

**Assessing the fit of a regression line**

Know that the square of the correlation,  $r^2$ , represents the **proportion** (or **percentage**) of the variation in  $y$  that's explained by  $x$ .

