# Math 107. Review sheet for the third exam

**Please do remember to bring your calculator to the exam! You may also want to learn how to use it to sum a long sequences of terms.**

**Chapter 9. Sections 1–3.**

**The estimation of means and confidence intervals**

**Things to remember:**
1) For large samples use $z$ (i.e. the normal distribution), for small samples use the $t$-distribution with an appropriate number of degrees of freedom.
2) If you are estimating the minimum size of the sample which guarantees that (at a given level of significance $\alpha$) the error $E$ is small, remember to round it up.
3) Sometimes, for small samples, you need to compute both $\bar{x}$ and $s$ directly from the sample.

**Problems:** 9.5, 9.7, 9.13, 9.15, 9.19, 9.23, 9.29, 9.31.

**Chapter 10, sections 1–7.**

**Things to remember:**
1) For large samples use $z$ (i.e. the normal distribution), for small samples use $t$-distribution. For two-sided $H_A$ use $z_{\alpha/2}$ or $t_{\alpha/2}$, for one-sided $H_A$ use $z_\alpha$ or $t_\alpha$ (or, perhaps, $-z_\alpha$ or $-t_\alpha$)
2) Sometimes, for small samples, the formula is more complicated than the one for the large samples (like in the case when we test differences between small samples).
3) Please use our "five-points" procedure when testing statistical hypotheses.

**Tests concerning means: large and small samples**
**Problems:** 10.13, 10.14, 10.15, 10.23, 10.25, 10.27, R143.

**Testing differences between means: large and small samples**
**Problems:** 10.35, 10.43, R.145, R.146.

**Testing differences between means: paired data**
**Problems:** 10.45, R.147

**Chapter 11, section 2–4.**

**Tests concerning proportions: large samples**
**Problems:** 11.9, 11.10, 11.11, 11.13.

**Testing differences between proportions in two samples: large samples**
**Problems:** 11.15, 11.17.

**Testing differences between proportions using $\chi^2$ function. Contingency tables**
**Problems:** 11.21, 11.23, 11.27–11.32.