Mini-Exam: Introduction to Geodesy 24.10.2007

(Function calculator)

1. **Fundamentals**

   (a) The focusing of a measurement telecope. What is *parallax*?

   (b) What is a geodesic?

   (c) Why does one, in line levelling, not have to center the levelling instrument and not measure its height?

2. **Statistics, units**

   (a) Given
   $$\alpha = 37^\circ 45'.$$
   Compute α also in radians and gons.

   (b) We have 52 playing cards, with values: the number value 2-10; ace is 1, jack is 11, queen is 12, king is 13. Compute the *expectancy* if a card is drawn blind from the pack.
   Equation:
   $$E(\underline{n}) = \sum_{i=1}^{13} i \cdot p(i),$$
   where $p(i)$ is the probability that the card's value is i.

3. **First and second geodetic problems**

   (a) Given a point A: $x_A = 6\,650\,000\,\text{m}$, $y_A = 480\,000\,\text{m}$. The distance to point B is $s = 1414.214\,\text{m}$ and the azimuth (direction angle) $t = 150\,\text{gon}$. Solve the first (forward) geodetic problem for points A, B.

   (b) Given is also point C with coordinates $x_C = 6\,649\,000\,\text{m}$, $y_C = 479\,000\,\text{m}$. Solve the second (inverse) geodetic problem for the points A, C.

Points:

Question	1 a b c	2 a b	3 a b	Total.
Points	9 3 3 3	8 3 5	8 4 4	25

Points	10	13	16	19	23
Grade	1	2	3	4	5