Homework 7.

30. Evaluate the limit $\lim\limits_{x\to 0} \dfrac{e^{x^2}-1-x^2}{x^4}$ (*1 point*)

31. Evaluate the limit $\lim\limits_{x\to 0} (\cos x)^{\frac{1}{\sin x}}$ (*1 point*)

32. Prove the inequality: $\operatorname{arctg} x \leq \arcsin x$ for all $0 \leq x \leq 1$. (*1 point*)

33. Find the local extrema of the function $f(x) = (2x+1)e^{x^2+x}$. Determine the intervals where the function increases or decreases. (*1 point*)

34. Find the inflection points of the function $f(x) = \ln(x^2+4x+5)$. Determine the intervals where the function convex or concave. (*1 point*)

Deadline: 8th of November