LAB 4: Applications of Maxima and Minima of functions of two variables,Taylor series expansion and L'Hospitals rule

Write a program to

1) Find the Maxima and Minima of $f(x,y) = x^2+y^2+3x-3y+4$.

2) Expand $sin(x)$ as Taylor series about $x=Pi/2$ upto 3^{rd} degree term. Also find $sin(100^o)$.

3) Find the Maclaurin series expansion of $sin(x) + cos(x)$ upto 3^{rd} degree term. Calculate sin(10) +cos(10).

4) Prove that $\lim_{x\to\infty}\left(1+\frac{1}{x}\right)^x$