Class - 7

Taylor's and Maclaurin's expansion for a function of two variables

1. Find the Taylor's expansion of e^{xy} interms of (x-1) and (y-1).

   Ans: $e\left[1+(x-1)+(y-1)+\frac{(x-1)^2}{2!}+(x-1)(y-1)+\frac{(y-1)^2}{2!}+\cdots\right]$

2. Expand $e^x ln(1+y)$ about origin up to 3rd degree terms.

   Ans: $y+xy-\frac{y^2}{2}+\frac{(x^2y-xy^2)}{2}+\frac{y^3}{3}$+...

3. Find Taylor's expansion of $\sqrt{1+x+y^2}$ in powers of (x-1) and (y-0).

   Ans: $\sqrt{2}\left[1+\frac{x-1}{4}-\frac{(x-1)^2}{32}+\frac{y^2}{4}+\cdots\right]$