Daniel Nuño 04-OCT-2021

TAREA 4: SERIES de TAYLOR

1: e^x $a=2$

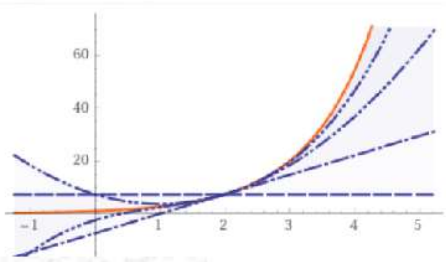
$f'(x) = e^x$ $f'(2) = e^2$

$f''(x) = e^x$ $f''(2) = e^2$

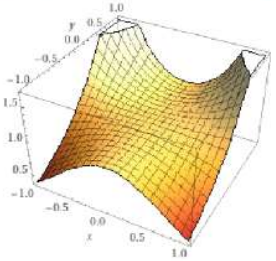
$f'''(x) = e^x$ $f'''(2) = e^2$

$e^2 + \frac{e^2}{1}(x-2) + \frac{e^2}{2}(x-2)^2 + \frac{e^2}{6}(x-2)^3$

$\sum_{n\geq 0} \frac{e^2(-2+x)^n}{n!}$



3D plot



2: a $f(x,y) = e^{x^2y}$, $(a,b) = (1,2)$

$\frac{\partial f}{\partial x} = 2xye^{x^2y}$

$\frac{\partial f}{\partial y} = x^2e^{x^2y}$

$\frac{\partial^2 f}{\partial x^2} = 2ye^{x^2y}(2x^2y+2)$

$\frac{\partial^2 f}{\partial y^2} = x^4e^{x^2y}$

$\frac{\partial^2 f}{\partial x \partial y} = 2xe^{x^2y}(x^2y+1)$

$P_2(x,y) = e^2 + 4e^2(x-1) + e^2(y-2) +$

$\frac{1}{2}\left(20e^2(x-1)^2 + 12e^2(x-1)(y-2) + e^2(y-2)^2\right)$

Contour plot