Giren,

f(xy) = excesy

Taylor series f(x,y) = f(a,b) + 1 [hfx (a,b) + Kty (a,b) + 1, [hfxx + 2hkfxy + 162fxy] + 3! [h3fxxx + 3h2kfxx 3hx2fxyy + x3fyyy)

Expand ex. cosy about (0,17/2) upto 3rd 91. term using tayor series. h=>c-a; K=y-b 'Soh'.

a=0; b=7/2 h = > c - 9 K = y - b = 9-7/2 fenation value at (0,7/2) f(xiy) = excosy e°cos 7/2 = 0 $f(x) = e^{x} cosy$ $f(g) = e^{\chi} (-shy)$ e° (-sin 7/2) $f_{xx} = e^x \cos y$ 0 fxy = ex (-sing) -19 - PX $f_{\gamma\gamma} = -e^{x}\cos y$ -e°cost/2 = 0 fxxx = ex cosy fxxy = erc (-sing) fary = -exc (cosy) -e° cos 11/2 = 0 fryy = excsing)

$$f(x_1y) = 0 + \frac{1}{1!} \left[x \times 0 + (y - \frac{1}{12}) (-1) + \frac{1}{2!} \right]$$

$$\left[x^2 \times 0 + 2x (y - \frac{1}{12}) (-1) + (y - \frac{1}{12})^2 (0) \right] + \frac{1}{3!} \left[x^3 \times 0 + 3x^2 (y - \frac{1}{12}) (-1) + 3x \times x (y - \frac{1}{12}) (0) + (y - \frac{1}{12})^3 (1) \right]$$

$$f(x_1y) = -(y - \frac{1}{12}) + \frac{1}{2} (-2x(y - \frac{1}{12})) + \frac{1}{6}$$

$$(-3x^2 (y - \frac{1}{12}) + (y - \frac{1}{12})^3 \right]$$

$$= -(y - \frac{1}{12}) - x(y - \frac{1}{12}) - \frac{3}{6} x^2 (y - \frac{1}{12}) + \frac{1}{6} (y - \frac{1}{12})^3$$

$$f(x_1y) = -(y - \frac{1}{12}) (1 + \frac{1}{12}) - \frac{3}{6} x^2 (y - \frac{1}{12}) + \frac{1}{6} (y - \frac{1}{12}) (1 + \frac{1}{12}) - \frac{3}{6} x^2 (y - \frac{1}{12}) + \frac{1}{6} (y - \frac{1}{12}) (1 + \frac{1}{12}) - \frac{3}{6} x^2 (y - \frac{1}{12}) + \frac{1}{6} (y - \frac{1}{12}) (1 + \frac{1}{12}) - \frac{3}{6} x^2 (y - \frac{1}{12}) + \frac{1}{6} (y - \frac{1}{12}) (1 + \frac{1}{12}) - \frac{3}{6} x^2 (y - \frac{1}{12}) + \frac{1}{6} (y - \frac{1}{12}) (y - \frac{1}{12}) + \frac{1}{6} (y - \frac{1}{12}) (y - \frac{1}{12}) (y - \frac{1}{12}) + \frac{1}{6} (y - \frac{1}{12}) (y - \frac{1}{12}) (y - \frac{1}{12}) + \frac{1}{6} (y - \frac{1}{12}) (y - \frac{1}{12}$$

 $(9 - 7/3)^3$