## Answer on Question #58806 – Math – Calculus

### Question

If
f(x,y)=tan−1(yx),
find
fx

### Solution

If

$$f(x,y) = \tan^{-1}(xy) = \frac{1}{\tan(xy)} = \cot(xy),$$

then using the chain rule of differentiation and the table of derivatives obtain

$$f'_x(x,y) = (\cot(xy))'_x = -\frac{1}{\sin^2(xy)} * (xy)'_x = -\frac{y}{\sin^2(xy)}.$$

If

$$f(x,y) = tan^{-1}(xy) = \arctan(xy),$$

then then using the chain rule of differentiation and the table of derivatives obtain

$$f'_x(x,y) = (\arctan(xy))'_x = \frac{1}{1+(xy)^2} * (xy)'_x = \frac{y}{1+x^2y^2}.$$