

Since $f(x,y)$ is continuous at $(0,0)$

$$\Rightarrow \lim_{x \rightarrow 0} \lim_{y \rightarrow 0} f(x,y) = \lim_{y \rightarrow 0} \lim_{x \rightarrow 0} f(x,y) = \alpha$$

$$\Rightarrow \alpha = \lim_{x \rightarrow 0} x + \frac{\ln(1 + \sin 2x^2)}{x^2} e^0 \Rightarrow$$

$$\Rightarrow \alpha = 0 + \lim_{x \rightarrow 0} \frac{\ln(1 + \sin 2x^2)}{x^2}$$

↓
($\frac{0}{0}$) form
l'Hopital rule

$$\Rightarrow \alpha = \lim_{x \rightarrow 0} \frac{1 \cdot x(\cos 2x^2) \cdot 4x}{(1 + \sin 2x^2) 2x}$$

$$\alpha = \frac{1}{1} \cdot 2 = \boxed{2}$$