

Answer on Question #57131-Math-Complex Analysis

Solve the following equation and find the values of x and y:

$$\frac{jx}{1+jy} = \frac{3x+j4}{x+3y}$$

Solution

$$jx(x+3y) = (3x+j4)(1+jy)$$

$$j(x^2+3xy) = (3x-4y) + j(3xy+4)$$

$$\begin{cases} (3x-4y) = 0 \\ (x^2+3xy) = (3xy+4) \end{cases} \rightarrow \begin{cases} y = \frac{3}{4}x \\ x^2 = 4 \end{cases} \rightarrow \begin{cases} y = \pm \frac{3}{2} \\ x = \pm 2 \end{cases}$$

Answer: $x = \pm 2$; $y = \pm \frac{3}{2}$.