

When $x = 0$:

$$y = a \sin bx = a \sin (b \cdot 0) = a \sin 0 = a \cdot 0 = 0, \text{ and}$$

$$y = a \cos bx = a \cos (b \cdot 0) = a \cos 0 = a \cdot 1 = a \neq 0$$

So the graph of $y = a \sin bx$ must pass through $(0, 0)$ and the graph of $y = a \cos bx$ will not pass through $(0, 0)$, regardless of the values of a and b .