EXAMPLE  Find the slope of the tangent line at (3, 4) to the circle $x^2 + y^2 = 25$.

Another way: Imagine that $y = f(x)$ and take the derivative of both sides of $x^2 + [f(x)]^2 = 25$.

New way again, but with simpler notation:

EXAMPLE  Find $y'$ if $x^2y^2 = x^3 + y^3$
EXAMPLE  Find $dy/dx$ if $1 + x = \sin(xy^2)$

EXAMPLE  Use implicit differentiation to find an equation of the tangent line to the curve $2(x^2 + y^2)^2 = 25(x^2 - y^2)$ at the point $(3, 1)$.

EXAMPLE  Find $y''$ by implicit differentiation: $x^3 + y^3 = 1$