Slope of a nonlinear curve

Finding the slope of a straight line of the form Y = a + bX is rather simple: the slope is given by b. What about the more general case of the unspecified equation Y = f(X)—How do we find its slope? If f(X) is nonlinear, its slope may be different at each point, but as long as the function is continuous and differentiable at a particular point, its slope is given by the derivative of f(X) evaluated at that point.

Consider for example the nonlinear continuous and differentiable function $Y = f(X) = X^2 + 4$. Suppose we want to know its slope at the point (X, Y) = (3, 13). The derivative of this function is f'(X) = 2X, which takes on the value 6 when X = 3. Hence, the slope of this function is 6 at the point (3, 13).