Answer on Question #51626 – Math – Calculus

limit Δx tends to 0; Δy / Δx = dy/dx. why we use Δx tends to 0 here ?? what does it mean?

Solution

The slope m of the secant line is the difference between the y values of these points divided by the difference between the x values, that is,

$$m = \frac{\Delta y(x)}{\Delta x}$$

The limit of the secant lines is the tangent line. Therefore, the limit of the difference quotient as Δx approaches zero, if it exists, should represent the slope of the tangent line. This limit is defined to be the derivative of the function $y(x)$:

$$y'(x) = \lim_{\Delta x - 0} \frac{y(x+\Delta x) - y(x)}{\Delta x}.$$