The Derivative Song (dy/dx)

words by Tom Lehrer
music: "There'll Be Some Changes Made"
by W. Benton Overstreet (1921)
(public domain)

You take a function of x and you call it y
Take any x-nought that you care to try
You make a little change and call it delta x
The corresponding change in y is what you find nex'
And then you take the quotient and now carefully
Send delta x to zero, and I think you'll see
That what the limit gives us, if our work all checks,
Is what we call dy/dx,
It's just dy/dx.
THE DERIVATIVE SONG
words by Tom Lehrer
music: "There'll be Some Changes Made" (public domain)
by W. Benton Overstreet (original lyrics by Billy Higgins)

caption on screen

You take a function of x and you call it y

\[ y = f(x) \]

Take any x-nought that you care to try

\[ y_0 = f(x_0) \]

You make a little change and call it delta-x

\[ \Delta x = x - x_0 \]

The corresponding change in y is what you find nex'

\[ \Delta y = y - y_0 \]

And then you take the quotient and now carefully

\[ \frac{\Delta y}{\Delta x} = \frac{y - y_0}{x - x_0} \]

Send delta-x to zero and I think you'll see

\[ \Delta x \to 0 \]

That what the limit gives us if our work all checks

\[ \lim_{\Delta x \to 0} \frac{\Delta y}{\Delta x} = \frac{dy}{dx} \]

Is what we call dy/dx

\[ \frac{dy}{dx} \]

It's just dy/dx