University of Limerick
Ollscoil Luimnigh

EPI-STEM

Calculus

Teacher CPD #2: Differentiating Constants

Potential Student Question

Why does the constant “disappear” when I differentiate?

Possible Explanation

If a student is simply told that a constant disappears when we differentiate it they may struggle to understand why!

However, the reason for this ‘disappearance’ can be explained both algebraically and graphically.

In order to explain this concept graphically we must first reinforce the idea that differentiation is the rate of change of one variable with respect to another.

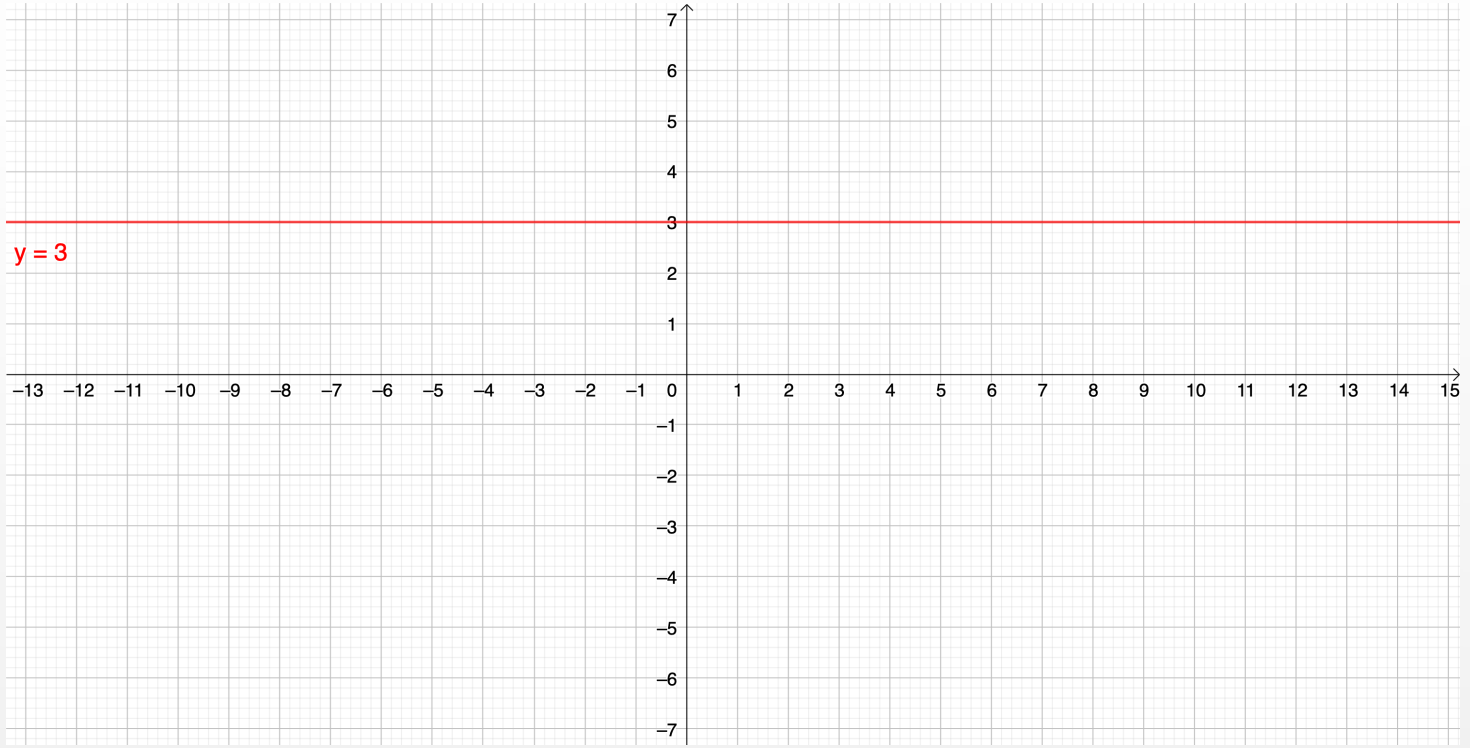
Possible Explanation

Consider the graph on the right. This graph represents the linear function $y = 3$.

Describe what is happening to y as x is getting bigger (or smaller)?

In other words what is the rate of change of y as x changes?

Given that a derivative is the rate of change we can say if $y = 3$ then:



Second Possible Explanation

If asked to differentiate with respect to x we must first write y in terms of x.

Let $y = a$, where $a \in \mathbb{R}$.

We know $x^0 = 1$

Hence, $y = a = ax^0$

So, $\frac{dy}{dx} = 0(ax^{-1})$

$\frac{dy}{dx} = 0$