

LEARNING DERIVATIVES

Here are three examples of similar looking functions and how different the derivative can be.

Example 1:

$$y = \sin^2 3x = (\sin 3x)^2$$

$$y' = 2 * (\sin 3x)^1 * (\cos 3x) * 3$$

$$y' = 6 * \sin 3x * \cos 3x$$

Example 2:

$$y = (\sin (3x^2))$$

$$y' = (\cos (3x^2)) * 6x$$

$$y' = 6x \cos(3x^2)$$

Example 3:

$$y = \sin (3x)^2 = \sin (9x^2)$$

$$y' = \cos (9x^2) * 2 * 9x$$

$$y' = 18 x * \cos (9x^2)$$