

Differentiation Assignment

Author Aaron Tresham

Date 2017-06-09T19:02:21

Project a8975d68-235e-4f21-8635-2051d699f504

Location [05 - Differentiation Assignment/Differentiation Assignment.sagews](#)

Original file [Differentiation Assignment.sagews](#)

1

Differentiation Assignment

Question 0

Watch the lecture video [here](#).

Did you watch the video? [Type yes or no.]

Question 1

Consider the function $f(x) = e^x(x+2)^8$. Compute the following. [Remember, e is *not* a variable.]

Part a

$$f'(x)$$

Part b

$$f^{(4)}(x)$$

Part c

$$f''(3)$$

Part d

$$f^{(5)}(-4)$$

Question 2

A ball is thrown straight up. The height of the ball (in feet) t seconds after being thrown is given by $h(t) = -16t^2 + 20t + 50$.

Part a

What is the velocity of the ball at $t = 2$ seconds?

Part b

What is the acceleration of the ball at $t = 2$ seconds?

Question 3

Find an equation of the line tangent to the graph of the function $g(x) = \frac{x}{x^2 - 4}$ at $x = 1$.

Graph the function (in blue) and the tangent line (in red) on the same set of axes with $0.5 < x < 1.5$.