

Online Homework System

Assignment Worksheet
9/30/16 - 9:59:19 PM EDT

Name: _____

Class: MAT1320 - Fall 2016

Class #: _____

Section #: _____

Instructor: Benoit Dionne

Assignment: Assignment 2 -- Fall 2016

Question 1: (1 point)

Find the derivative of

$$f(x) = 4e^4 + e + 12$$

$$f'(x) = \underline{\hspace{2cm}}.$$

Question 2: (1 point)

Consider the function

$$f(x) = x^4 + 4e^x.$$

(a) What is the derivative of f at $x = 0$?

$$f'(0) = \underline{\hspace{2cm}}$$

(b) Using the (correct) value of $f'(0)$, give the equation of the tangent line to the curve $y = f(x)$ at the point $(0, f(0)) = (0, 4)$.
Your answer must be in the form of an equation for y in terms of x , that is, of the form $y = L(x)$ for some linear function $L(x)$.**Question 3: (1 point)**

$$\text{Let } f(t) = e^{t+4} - 7\sqrt{t^5} + 4t - 12.$$

$$\text{Find the first derivative: } f'(t) = \underline{\hspace{2cm}}.$$

$$\text{Find the second derivative: } f''(t) = \underline{\hspace{2cm}}.$$

Question 4: (1 point)

Find the derivative of

$$g(t) = (t^4 + 5e^t)(1 - \sqrt{t})$$

$$g'(t) = \underline{\hspace{2cm}}.$$

Question 5: (1 point)

We consider the function $g(x) = \frac{4x^4}{e^x + 1}$.

The derivative of g is $g'(x) = \underline{\hspace{2cm}}$.

Question 6: (1 point)

This question shows you how you can determine the derivative of a function without knowing its full formula. (It is a handy trick when your formula is very long and complex to write out.)

Set $p(x) = xf(x)g(x)$, where f and g are differentiable functions that satisfy

$$f(2) = 1,$$

$$f'(2) = 2,$$

$$g(2) = 6$$

$$\text{and } g'(2) = 6.$$

Then $p'(2) = \underline{\hspace{2cm}}$.

Question 7: (1 point)

Find an equation of the tangent line to the curve

$$y = x - \tan(x)$$

at the point $(\pi / 4, (\pi / 4) - 1)$ Express your answer in the form $y = mx + b$.

Question 8: (1 point)

Find the derivative of

$$g(x) = \left(\frac{x^4 + 1}{x^4 - 1} \right)^4$$

$g'(x) =$ _____

Question 9: (1 point)

Consider the function

$$g(t) = \sqrt{15 + 8 \cos^6(t)}$$

Compute the derivative of g at $x = \frac{\pi}{4}$.

Answer : $g'\left(\frac{\pi}{4}\right) =$ _____

(Your answer must be exact and thus may include commands like sqrt and / if needed; do not give a decimal approximation.)

Question 10: (1 point)

Consider the function

$$h(t) = e^{-2t} \cos(4t) .$$

Compute $h'(\pi/3) \cong$ _____

Give the value accurate to three decimal places.
