

MATH 211 CP LT3 LT6

Tyeon Ford

TOTAL POINTS

2 / 2

QUESTION 1

1 LT3 1 / 1

✓ + 1 pts ✓ *Correct: The solution demonstrates complete mastery of the given Target.*

+ 0 pts * Revision: The solution might demonstrate complete mastery of the given Target, but needs to be revised for clarity/accuracy.

+ 0 pts ⚠ Issues: The solution demonstrates partial understanding of the given Target, but has one or more issues that suggest that further study is required to develop complete mastery.

+ 0 pts x: More practice is needed to demonstrate understanding of the given Target.

+ 0 pts Not completed/Already mastered

💬 Your work has an arithmetic error or typo (for example, 2^0 is not 0)

partial understanding of the given Target, but has one or more issues that suggest that further study is required to develop complete mastery.

+ 0 pts x: More practice is needed to demonstrate understanding of the given Target.

+ 0 pts Not completed/Already mastered

💬 One of your derivatives is not correct.

QUESTION 2

2 LT6 1 / 1

✓ + 1 pts ✓ *Correct: The solution demonstrates complete mastery of the given Target.*

+ 0 pts * Revision: The solution might demonstrate complete mastery of the given Target, but needs to be revised for clarity/accuracy.

+ 0 pts ⚠ Issues: The solution demonstrates

MATH 211 CP LT7 LT8

Tyeon Ford

TOTAL POINTS

1 / 2

QUESTION 1

1 LT7 1 / 1

✓ + 1 pts ✓ *Correct: The solution demonstrates complete mastery of the given Target.*

+ 0 pts * Revision: The solution might demonstrate complete mastery of the given Target, but needs to be revised for clarity/accuracy.

+ 0 pts ⚠ Issues: The solution demonstrates partial understanding of the given Target, but has one or more issues that suggest that further study is required to develop complete mastery.

+ 0 pts x: More practice is needed to demonstrate understanding of the given Target.

+ 0 pts Not completed/Already mastered

demonstrate understanding of the given Target.

+ 0 pts Not completed/Already mastered

💬 Part (b) is missing parenthesis. Part (d) is incorrect.

QUESTION 2

2 LT8 0 / 1

+ 1 pts ✓ *Correct: The solution demonstrates complete mastery of the given Target.*

✓ + 0 pts * Revision: *The solution might demonstrate complete mastery of the given Target, but needs to be revised for clarity/accuracy.*

+ 0 pts ⚠ Issues: The solution demonstrates partial understanding of the given Target, but has one or more issues that suggest that further study is required to develop complete mastery.

+ 0 pts x: More practice is needed to

Name: Tyeon Ford

LT3: I can find the derivative of a function, both at a point and as a function, using the definition of the derivative.

1. Let $f(x) = 2^x$. Use the limit definition of the derivative to write out the limit you would need to calculate in order to compute $f'(0)$. You do not need to actually calculate the limit.

$$\lim_{h \rightarrow 0} \frac{f(a+h) - f(a)}{h}$$

$$f(a) = 0 \quad f(a+h) = 2^{(0+h)} \rightarrow 2^h$$

$$\lim_{h \rightarrow 0} \frac{2^h - 0}{h} \rightarrow \lim_{h \rightarrow 0} \frac{2^h}{h}$$

LT6: I can compute derivatives of basic functions including constant, power, polynomial, exponential, and trigonometric functions.

1. **Show your work.** Your answer should include proper derivative notation; for example, the derivative of $p(z)$ would be labelled " $p'(z) =$ " or " $\frac{dp}{dz} =$ ".

- (a) Find the derivative of $f(x) = \frac{1}{\sqrt{x}}$.

$$f'(x) = -\frac{1}{2} x^{-\frac{1}{2}}$$

- (b) Find the derivative of $g(t) = 2e^t$.

$$g'(t) = 2e^t$$

- (c) Find the derivative of $s(x) = 4^x + 3x^2$.

$$s'(x) = 4^x \ln(4) + 6x$$

- (d) Find the derivative of $r(x) = \pi$.

$$r'(x) = 0$$

Product

$$f'(x) \cdot g(x) + f(x) \cdot g'(x)$$

Quotient

$$\frac{f'(x) \cdot g(x) + f(x) \cdot g'(x)}{[g(x)]^2}$$

LT7: I can apply the Product and Quotient Rules to differentiate functions.

1. Show your work. Your answer should include proper derivative notation; for example, the derivative of $p(z)$ would be labelled " $p'(z) =$ " or " $\frac{dp}{dz} =$ ".

(a) Find the derivative of $f(x) = x^2 e^x$. Product

$$f(x) = x^2$$

$$f'(x) = 2x$$

$$g(x) = e^x$$

$$g'(x) = e^x$$

$$f'(x) = (2x)(e^x) + (x^2)(e^x)$$

(b) Find $g'(t)$ given $g(t) = 5t^3 \sin(t)$. Product

$$f(x) = 5t^3$$

$$f'(x) = 15t^2$$

$$g(x) = \sin(t)$$

$$g'(x) = \cos(t)$$

$$g'(t) = 15t^2 \cdot \sin(t) + 5t^3 \cdot \cos(t)$$

(c) Find the derivative of $s(x) = \frac{2x}{4+x^2}$. Quotient

$$f(x) = 2x$$

$$f'(x) = 2$$

$$g(x) = 4+x^2$$

$$g'(x) = 2x$$

$$s'(x) = \frac{2(4+x^2) - 2x \cdot 2x}{[4+x^2]^2}$$

$$s'(x) = \frac{8+2x^2-4x^2}{[4+x^2]^2}$$

(d) Find $h'(x)$ given $h(x) = \frac{x}{1+e^x}$. Quotient

$$f(x) = x$$

$$f'(x) = 1$$

$$g(x) = 1+e^x$$

$$g'(x) = e^x$$

$$h'(x) = \frac{(1)(1+e^x) - x \cdot e^x}{[1+e^x]^2}$$

$$h'(x) = \frac{1+e^x - x \cdot e^x}{[1+e^x]^2}$$

CD3: I can apply the Chain Rule to differentiate composite functions.

1. Show your work. Your answer should include proper derivative notation; for example, the derivative of $p(z)$ would be labelled " $p'(z) =$ " or " $\frac{dp}{dz} =$ ".

- (a) Find the derivative of $f(x) = \sqrt[3]{1+8x}$.

The derivative of the inside times the derivative of the outside,

$$\begin{aligned} \text{Inner} &= 1+8x \rightarrow 8 \\ \text{outer} &= x^{\frac{1}{3}} \rightarrow \frac{1}{3}x^{-\frac{2}{3}} \end{aligned}$$

$$f'(x) = 8 \cdot \frac{1}{3}(1+8x)^{-\frac{2}{3}}$$

- (b) Find $g'(t)$ given $g(t) = (t^4 + 5t^2 - 1)^5$.

$$\begin{aligned} \text{Inner} &= t^4 + 5t^2 - 1 \rightarrow 4t^3 + 10t \\ \text{outer} &= x^5 \rightarrow 5x^4 \end{aligned}$$

$$g'(t) = (5(t^4 + 5t^2 - 1)^4) \cdot (4t^3 + 10t)$$

- (c) Find the derivative of $s(x) = \cos(2x^2 + 5)$.

$$\begin{aligned} \text{Inner} &= 2x^2 + 5 \rightarrow 4x \\ \text{outer} &= \cos(x) \rightarrow -\sin(x) \end{aligned}$$

$$s'(x) = 4x \cdot -\sin(2x^2 + 5)$$

- (d) Find the derivative of $g(x) = e^{cx}$ given that c is a constant.

$$\begin{aligned} \text{Inner} &= e^x \cdot x \\ \text{outer} &= e^x \end{aligned}$$

$$g'(x) = e^x$$

