

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

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

demonstrate understanding of the given Target.

+ 0 pts Not completed/Already mastered

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

Name: Tyron FodLT3: I can find the derivative of a function, both at a point and as a function, using the definition of the derivative. $2^x \ln(2)$

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.

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

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

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

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

(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 $r(x) = \pi$.

$$r'(x) = 0$$

$$\begin{array}{ll}
 \text{Product} & \text{Quotient} \\
 f(x) \cdot g(x) + f'(x) \cdot g(x) & \frac{f'(x) \cdot g(x) + f(x) \cdot g'(x)}{[g(x)]^2}
 \end{array}$$

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

$$\begin{aligned}
 f(x) &= x^2 \\
 f'(x) &= 2x \\
 g(x) &= e^x \\
 g'(x) &= e^x
 \end{aligned}$$

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

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

$$\begin{aligned}
 f(t) &= 5t^3 \\
 f'(t) &= 15t^2 \\
 g(t) &= \sin(t) \\
 g'(t) &= \cos(t)
 \end{aligned}$$

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

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

$$\begin{aligned}
 f(x) &= 2x \\
 f'(x) &= 2 \\
 g(x) &= 4+x^2 \\
 g'(x) &= 2x
 \end{aligned}$$

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

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

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

$$\begin{aligned}
 f(x) &= x \\
 f'(x) &= 1 \\
 g(x) &= 1+e^x \\
 g'(x) &= e^x
 \end{aligned}$$

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

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 $f(x) = \sqrt[3]{1+8x}$.

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

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

The derivative of the inside times the derivative of the outside.

(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.

$$\begin{aligned} \text{Inner} &= e^x \rightarrow x \\ \text{Outer} &= e^x \end{aligned}$$
$$g'(x) = e^x$$

