MATH 211 CP LT7 LT8 LT9 LT10

Tyeon Ford

TOTAL POINTS

1 / 4

QUESTION 1

1 LT7 **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*

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*

QUESTION 3

3 LT9 **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

Part (c) incorrect.

QUESTION 4

4 LT10 **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

- All parts are incorrect: more practicee is needed with the basic rules in addition to practice with combination of rules

MATH 211: Calculus I F23 CP LT7 LT8 LT9 LT10

Name: Tyeon Ford

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 $s(x) = x^3 \sec(x)$. Product

   ~~$s'(x) =$~~

   $f(x) = x^3$

   $f'(x) = 3x^2$

   $g(x) = \sec(x)$

   $g'(x) = \sec$

   (b) Find $f'(x)$ given $f(x) = \frac{\sqrt{x}}{e^x - 5}$.

   (c) Find the derivative of $f(t) = e^t(t^3 + 2t)$.

   (d) Find the derivative of $g(x) = \frac{x^3 - 4^x}{\tan(x)}$.

LT8: 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 $g'(t)$ given $g(t) = e^{\cos(t)}$.

   (b) Find the derivative of $s(x) = \sin(x^2)$.

   (c) Find the derivative of $h(t) = \sqrt{1-2t}$.

   (d) Find the derivative of $f(x) = (x^3 - 1)^{100}$.

LT9: I can compute derivatives of basic inverse functions including logarithmic and inverse trigonometric functions.

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

   (a) Find the derivative of $f(x) = 2\ln(x) - 5$.

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

   (b) Find the derivative of $g(\theta) = \arctan(\theta)$.

   $\tan^{-1}(\theta)$

   $g'(\theta) = \frac{1}{1+(\theta)^2}$

   (c) Find the derivative of $f(x) = \frac{\arcsin(x)}{2}$.

   $\sin^{-1}(x) \to \frac{1}{\sqrt{1-x^2}}$

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

LT10: I can compute the derivative of functions using combinations of rules.

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 $f(x) = (e^{2x})(2^x - x)$.

   Chain rule

   inner $\to 2x \to 2$

   outer $\to e^{2x} \to e^{2x}$

   $f'(x) = 2 \cdot e^{2x}$ $(2 \cdot e^{2x})(2^x - x)$

   $f'(x) = 2e^{2x}$

   $g(x) = 2^x - x$ $f'(x) = (2e^{2x})(2^x - x) + (2e^{2x})(2^x \cdot \ln(2) - 1)$

   $g'(x) = 2^x \cdot \ln(2) - 1$

Inner $5+x \to 1$

$\cos(5+x)$

Inner $3x \to 3$

outer $\cos(3x) \to -\sin(3x)$

(b) Find the derivative of $g(x) = \sin(5+x)\cos(3x)$

$(3 \cdot -\sin(3x)) \cdot (\cos(5+x))$

$f(x) = \cos(5+x)$

$f'(x) = -\sin(5+x)$

$g(x) = 3 \cdot -\sin(3x)$

$g'(x) = -3\cos(3x)$

$g'(x) = (-\sin(5+x))(-3\sin(3x)) + (\cos(5+x))(-3\cos(3x))$

(c) Find the derivative of $h(x) = \frac{e^x - 1}{\sin(x^2)}$.

Inner $x^2 \to 2x$

outer $\sin(x^2) \to \cos(x^2)$

$2x \cdot \cos(x^2)$

$f(x) = e^x - 1$

$f'(x) = e^x$

$g(x) = 2x \cdot \cos(x^2)$

$g'(x) = 2 \cdot -\sin(x^2)$

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

(d) Find the derivative of $c(x) = \sqrt{3x^3 - 5}$.

Inner $3x^3 - 5 \to 9x^2$

outer $\sqrt{x} \to \frac{1}{2}(3x^3-5)^{-\frac{1}{2}}$

$(9x^2)\left(\frac{1}{2}(3x^3-5)^{-\frac{1}{2}}\right)$

$f(x) = 9x^2$

$f'(x) = 18x$

$g(x) = \frac{1}{2}(3x^3-5)^{-\frac{1}{2}-\frac{2}{2}}$

$g'(x) = -\frac{1}{2}(3x^3-5)^{-\frac{3}{2}}$

$c'(x) = (18x)\left(\frac{1}{2}(3x^3-5)^{-\frac{1}{2}}\right) + (9x^2)\left(-\frac{1}{2}(3x^3-5)^{-\frac{3}{2}}\right)$