Calculus I Mock Fall 2024: Amendments

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Note: This document is prepared for people who obtained a hard copy of their respective streams of mock papers on Friday.

Mock Follow-ups

- I could organize **individual 10-min Zoom meetings** to discuss your answers/ errors/ reminders, if you submit your paper.
- Quota: 25 students for each stream. First-come-first-served.
- Marking scheme would NOT be released; rather, it would be went through with you together during the zoom meeting.
- Please provide your reference number and SID when submitting the paper via the contact methods.

Paper submission deadlines are:

- 10/12/2024 (Tue) (MATH 1012/MATH 1013)
- 14/12/2024 (Sat) (MATH 1003)

MATH 1003 - MCQ 5

Amend Choices:

- $u'(x) = 3 + \frac{4}{x^2} + \frac{15}{x^4}$
- $u'(x) = \frac{15x^4 + 12x^2 - 15}{x^5}$
- $u'(x) = 3 - \frac{4}{x^2} - \frac{15}{x^4}$
- $u'(x) = \frac{15x^4 - 12x^2 + 15}{x^5}$
- $u'(x) = 3 - \frac{4}{x} - \frac{15}{x^3}$

MATH 1003 - MCQ 6

Amend Choices:

- $1203 \cdot 5^{2023} \cdot 6^{1203}$
- $-2024 \cdot 5^{2023} \cdot 6^{1203}$
- $2024 \cdot 5^{2024} \cdot 6^{1202}$
- $-1203 \cdot 5^{2024} \cdot 6^{1202}$
- $1203 \cdot 5^{2024} \cdot 6^{1202}$

Amend Question:

Which of the following is correct?

- $\frac{3x^2}{y^3} + \ln y + \left(\frac{x}{\ln 3} - \frac{3x^3}{y^4}\right)\frac{dy}{dx} = 0$
- $\frac{3x^2}{y^3} + \frac{\ln y}{\ln 3} + \left(\frac{x}{y \ln 3} - \frac{3x^2}{y^4}\right)\frac{dy}{dx} = 10$
- $\frac{3x^2}{y^3} + \frac{\ln y}{\ln 3} + \left(\frac{x}{y \ln 3} - \frac{3x^3}{y^4}\right)\frac{dy}{dx} = 0$
- $\frac{3x^2}{y^3} + \frac{1}{\ln 3} + \left(\frac{x}{y \ln 3} - \frac{x^3}{y^4}\right)\frac{dy}{dx} = 10$
- $\frac{3x^2}{y^3} + \frac{\ln y}{\ln 3} + \left(\frac{x \ln y}{y \ln 3} - \frac{3x^3}{y^4}\right)\frac{dy}{dx} = 0$

MATH 1003 - LQ 21

Change question and information:

- 400 km south $\implies$ 520 km south
- $t = 10$ hours $\implies$ $t = 13$ hours
- **Add part**:
  (b) (2 pts) Use the information at $t = 4$ hours to show that

$$a^2 + b^2 - 130a = 0$$

(c) Find the speeds of the two cars by constructing another equation on a and b. ($6 \to 4$ pts)

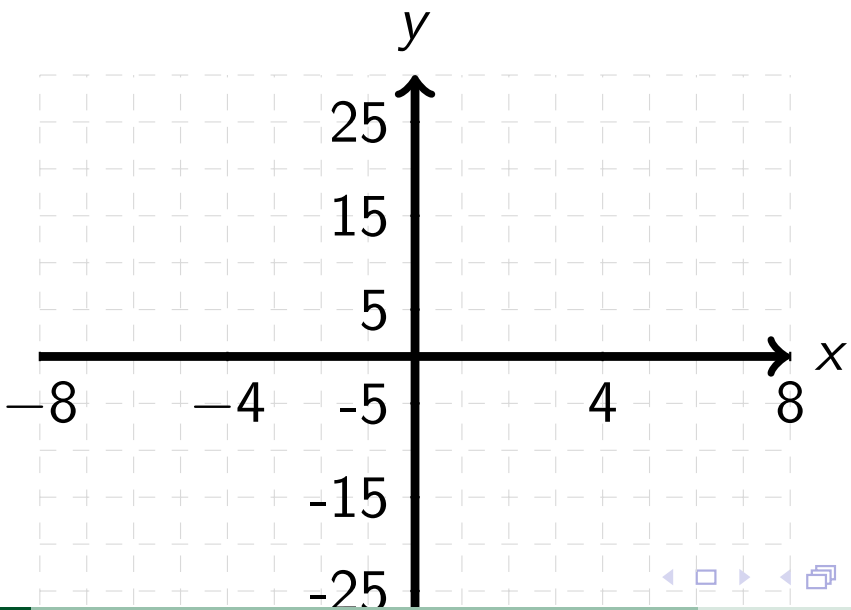
Change Numbers:

- Given a function $f(x) = \dfrac{x^3 + 5x^2}{(x-1)^2}$, with first and second derivatives:

$$f'(x) = \frac{x(x^2 - 3x - 10)}{(x-1)^3}, f''(x) = \frac{2(13x+5)}{(x-1)^4}$$

It is further given that $\dfrac{x^3 + 6x^2}{(x-1)^2} = x + 7 + \dfrac{13}{x-1} + \dfrac{6}{(x-1)^2}$.

- **Changing Grid Scales**:



MATH 1012 - MCQ 6

Change piecewise function:

$$f(x) = \begin{cases} 4e^x + mx - 4 & \text{if } -e < x \leq 0 \\ \ln(\ln(x+e)) & \text{if } 0 < x < e \end{cases}$$

MATH 1012 - MCQ 18

Change Choices:

- $1 + \frac{1}{3} \ln\left(\frac{1+e^3}{2}\right)$
- $1 + \frac{1}{3} \ln\left(1 + e^3\right)$
- $\frac{1}{3} \ln\left(\frac{1+e^3}{2}\right)$
- $1 + \frac{1}{3} \ln\left(\frac{2}{1+e^3}\right)$
- $1 + \ln(1 + e^3)$

MATH 1013 - MCQs 7 and 14

Q7: Change Quantity Asked Find $\left.\frac{d}{dx}\left(f \circ g^{-1}(x)\right)\right|_{x=1}$.

Q14: Change Choices:

- $1+\frac{1}{3}\ln\left(\frac{1+e^3}{2}\right)$
- $1+\frac{1}{3}\ln\left(1+e^3\right)$
- $\frac{1}{3}\ln\left(\frac{1+e^3}{2}\right)$
- $1+\frac{1}{3}\ln\left(\frac{2}{1+e^3}\right)$
- $1+\ln(1+e^3)$

MATH 1013 - LQs 17 and 20

Q17: Change Quantities to Prove:

(i) $V = \frac{25\pi}{432}\left[(96+h)^3 - 96^3\right]$,

(ii) $A = \frac{65\pi}{144}[(96+h)^2 - 96^2]$,

Q20:

Change $k = -5$ to $k = 5$