



香港考試及評核局
Hong Kong
Examinations and
Assessment Authority

Briefing session on 2021 HKDSE Mathematics Extended Part Module 1

Contents

- General marking guidelines
- Candidates' performances

General marking guidelines

- 'M' marks
for correct method with substitution
- 'A' marks
for correct answer that follows from the steps
- '1'
for correctly completing a proof or arriving at a given answer
- f.t.
stands for 'follow through', all related parts should be correct to be given this mark

Common mistakes

- Candidates missed 'dx' in the integration, thus giving wrong expressions like $\int_a^b f(x)$
- Candidates should use brackets appropriately, missing brackets would result in different meanings:

$(\ln x)^2$ vs $\ln x^2$

$$\frac{d}{dx} \left(x + 1 - \frac{x-2}{(x-1)^2} \right) \text{ vs } \frac{d}{dx} x + 1 - \frac{x-2}{(x-1)^2}$$

Question 1

Part (a)

- Some candidates made mistakes in handling the expectation, like $E(5X+1) = 5E(X)$.

Question 2

Part (c)

- Some candidates failed to compare the value they found with 0.6 and drew a conclusion.

Question 3

Part (b)

- Some candidates failed to multiply $(0.8)^{10}$ to the expression $((1 - 0.1)^{10} + C_1^{10}(1 - 0.1)^9(0.1) + C_2^{10}(1 - 0.1)^8(0.1))$.

Question 4

Part (b)

- Some candidates made mistakes in forming the inequality, they used $<$ instead of \leq .

Question 5

Part (a)

- Some candidates failed to use the chain rule $\frac{dg(u)}{dx} = \frac{dg(u)}{du} \frac{du}{dx}$.

Part (b)

- Some candidates used wrong limits or forgot to add dx in the integral $\int_0^8 f(x)dx$.

Question 6

Part (a)

- A small number of candidates failed to show the working steps in the expansion of e^{-6x} .
- Careless mistakes in the expansion,
e.g. $(1 - kx^2)^5 = 1 - 5kx^2 + 10kx^4 + \dots$


X

Question 7

Part (b)

- Many candidates were able to apply the first derivative test.
- Some candidates did not represent the first derivative test clearly.

E.g.

$$\frac{dy}{dx} \leftarrow \begin{array}{c} + \qquad \qquad - \\ \hline \qquad \qquad 3 \end{array} \rightarrow$$


- Only some candidates were able to consider the two end points as well.

Question 8

Part (a)

- Some candidates failed to find $\frac{d}{dx} 2^{kx}$.

Part (b)

- Some candidates failed to find the constant of integration correctly due to careless mistake.
- Some candidates failed to give the exact value of the constant of integration.

Question 9

Part (c)(i)

- Candidates failed to use the correct combination coefficient $C_1^5 C_2^4$, common mistakes include C_1^5 , $5!$, $\frac{5!}{2!}$ and P_3^5 .

Part (c)(ii)

- Some candidates tried to solve the problem by considering the complementary event. However, they used $\frac{1-P(A' \cap B)}{P(B)}$ instead of $1 - \frac{P(A' \cap B)}{P(B)}$.

Question 10

Part (c)

- Some candidates wrongly multiplied the term $\left(\frac{1.3^1 e^{-1.3}}{1!}\right) \left(\frac{0.9^1 e^{-0.9}}{1!}\right)$ by 2.
- Some candidates missed the factors $\left(\frac{0.9^0 e^{-0.9}}{0!}\right)$ and $\left(\frac{1.3^0 e^{-1.3}}{0!}\right)$ in the other terms.

Question 11

Part (a)

- Many candidates did not simplify the derivatives obtained, such as

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

Part (b)(iii)

- Note that $f''(x) = x^{-\frac{3}{2}}(2-x)^{-\frac{5}{2}}(2x-1) < 0$ for $0 < x < 0.5$. Many candidates wrongly included the end points 0 and 0.5 and wrote $f''(x) < 0$ for $0 \leq x \leq 0.5$.
- Some candidates wrongly drew the conclusion that ' $K < 0.393645504$ ' by considering $f''(x)$. They overlooked that K is not estimated using trapezoidal rule.

Question 12

Part (a)

- Some candidates considered $\frac{dV}{dt} = 0$ instead of $\frac{d^2V}{dt^2} = 0$ when finding T .
- Many candidates did not prove that the rate of change of the volume of rain water in the tank attains its maximum value when $t = T$.

Part (c)(i)

- Some candidates failed to express the volume of rain water in the tank in terms of h .

END