

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 $\ln x^2$

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

Part (a)

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

Part (c)

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

Part (b)

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

Part (b)

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

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 $\int_0^8 f(x) dx$.

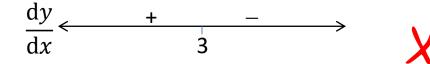
Part (a)

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

Part (b)

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

E.g.



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

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.

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 $1-\frac{P(A'\cap B)}{P(B)}$.

Part (c)

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

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 $0 \le x \le 0.5$.
- Some candidates wrongly drew the conclusion that 'K < 0.393645504' by considering f''(x). They overlooked that K is not estimated using trapezoidal rule.

Part (a)

- Some candidates considered $\frac{\mathrm{d}v}{\mathrm{d}t}=0$ instead of $\frac{\mathrm{d}^2v}{\mathrm{d}t^2}=0$ 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