

Mathematics ABC — Midterm — 45 minutes

October 43th 2318

- The test consists of 5 pages and 3 questions worth a total of 20 marks.
- This is a closed-book examination. **None of the following are allowed:** documents, cheat sheets or electronic devices of any kind (including calculators, cell phones, etc.)
- No work on this page will be marked.
- Fill in the information below before turning to the questions.

Student number								
Section								
Name							
Signature								

Please do not write on this page — it will not be marked.

Additional instructions

- Please use the spaces indicated.
- If you require extra paper then put up your hand and ask your instructor.
 - You must put your name and student number on any extra pages.
 - You must indicate the test-number and question-number.
 - Please do this **on both sides** of any extra pages.
- Please do not dismember your test. You must submit all pages.
- Smoking is strictly prohibited during the test.

Formula sheet

You may find the following formulas useful in the questions that follow.

$$a^2 + b^2 = c^2$$

$$e^{i\pi} + 1 = 0$$

$$\sum_{i=1}^n i = \frac{n(n+1)}{2}$$

$$\frac{d}{dx}(f+g) = \frac{df}{dx} + \frac{dg}{dx}$$

$$\int (f+g)dx = \int fdx + \int gdx$$

$$\cos(a+b) = \cos a \cos b - \sin a \sin b$$

$$\sin(a+b) = \sin a \cos b + \cos a \sin b$$

$$A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$$

$$A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$$

$$\overline{A \cap B} = \overline{A} \cup \overline{B}$$

$$\overline{A \cup B} = \overline{A} \cap \overline{B}$$

1. 5 marks Please place your answers in the boxes provided.

(a) Find the derivative of $\cos(x^2y^3)$ with respect to y . (**note this is ver2**)

Answer: $-3x^2y^2 \sin(x^2y^3)$

Solution: We calculate the partial derivative. We also need the chain rule.

(b) Another little thing here, **but this is ver2**

Answer: $\sin(x)$

Solution: Putting in your solutions ahead of time really helps calibrate your test. **but this is ver2**

(c) A third thing, **but this is ver2**

Answer: $\int \sin(x)dx$

Solution: Yet another solution goes here. **but this is ver2**

2. 5 marks Please place your answers in the boxes provided. [Note if mark this question as “fix” in the spec it will always be chosen from version 1; version 2 will never be used.]

(a) Answer something not quite so simple, **but this is ver2**

Answer: ABC

Solution: Some working will go here. **but this is ver2 and less simple**

(b) Another less simple thing here, **but this is ver2**

Answer: $\sin(x)$

Solution: Putting in your solutions ahead of time really helps calibrate your test.

but this is ver2

(c) A third thing unsimple thing here, **but this is ver2**

Answer: $\int \sin(x)dx$

Solution: Yet another solution goes here. **but this is ver2**

3. 10 marks A long question goes here. In fact it is sufficiently long that we make sure you have a whole extra blank page for your work.

[But this is ver2 which is the same question but some details have been changed slightly.]

Solution: A long solution here. Maybe it even contains a diagram? **but this is ver2 of the diagram**