Alberta | Grade 12

Mathematics 30–1 Diploma Examination

Practice set 1 Student booklet

In this practice exam · 3 hours in all

1	**Machine Scored**	32 questions
2	**Written Response**	3 questions

Before you start

- You have 3 hours to finish.
- You may take up to 3 more hours.
- You may use an approved calculator.
- Use the reference pages whenever you need them.
- In the written questions, show your work.

Your initials or class number
Not your student number

_____



Finished? Ask an adult to photograph your pages.
MapleMind marks them and shows what to practise next.

Sample

Part 1

Machine Scored

Questions 1 to 32

1 A sensor's calibration curve is modelled by $y = 5^x$. The table lists points on this graph.

Which set gives the corresponding points on its inverse, $y = \log_5 x$?

Sensor calibration curve

x	y
0	1
1	5
2	25

- ◯ **A** $(1, 0),\ (5, -1),\ (25, -2)$
- ◯ **B** $(0, 1),\ (1, 5),\ (2, 25)$
- ◯ **C** $(1, 0),\ (5, 1),\ (25, 2)$
- ◯ **D** $(0, 1),\ (5, 1),\ (25, 2)$

2 Given the polynomial $P(x) = x^4 - 2x^3 - 7x^2 + 8x + 12$.

Factor $P(x)$ completely over the integers.

- ◯ **A** $(x - 2)(x + 2)(x - 3)(x + 1)$
- ◯ **B** $(x - 2)(x + 2)(x - 3)(x - 1)$
- ◯ **C** $(x - 2)(x - 2)(x + 1)(x + 3)$
- ◯ **D** $(x + 2)(x - 2)(x + 1)(x + 3)$

Sample

Part 2

Written Response

Questions 33 to 35

33 Let $f(x) = \sqrt{x+14}$, with domain $x \geq -14$, and let $g(x) = x^2 - 27$, with domain all real numbers.

Show your work.

1. **Determine algebraically** $(f \circ g)(x)$ and its domain.

2. **Determine algebraically** $(g \circ f)(x)$, state its domain, and use both composites to justify whether composition is commutative for these functions.

Show your work

Sample

Answer key

Practice set 1. Add up the marks on the score sheet, page 5.

A question with several parts earns its mark only when every part is right.

Part 1 · Machine Scored

1 mark each · 32 marks

No.	Answer	Mark	What it tests	Page
1	[illegible]	1	Relations and Functions	2
2	[illegible]	1	Relations and Functions	2
3	[illegible]	1	Relations and Functions	3
4	[illegible]	1	Relations and Functions	3
5	[illegible]	1	Relations and Functions	4
6	[illegible]	1	Relations and Functions	5
7	[illegible]	1	Relations and Functions	5
8	[illegible]	1	Relations and Functions	6
9	[illegible]	1	Relations and Functions	7
10	[illegible]	1	Relations and Functions	8
11	[illegible]	1	Relations and Functions	9
12	[illegible]	1	Relations and Functions	10
13	[illegible]	1	Relations and Functions	11

Sample

No.	Answer	Mark	What it tests	Page
31	[illegible]	1	Permutations, Combinations, and Binomial Theorem	21
32	[illegible]	1	Permutations, Combinations, and Binomial Theorem	22

Part 2 · Written Response

15 marks

No.	[illegible]	Mark	What it tests	Page
33	[illegible]	5	Relations and Functions	24
34	[illegible]	5	Relations and Functions	25
35	[illegible]	5	Permutations, Combinations, and Binomial Theorem	26

Question 33: worked answer and marks

5 marks

[illegible]

Sample

MapleMind

File 1
Start here

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The guide for students and adults

For the student

What to expect	Page 2
Your skills	Page 3
Your study plan	Page 6
How to study	Page 7
Your progress	Page 8
Exam day	Page 9

For the adult

How to print it, run it and mark it	Page 10
Answer keys Keep these files away from the student.	File 3

In your download

File 1	Start here (this guide)
File 2	Practice exam, Set 1
File 3	Answer key, Set 1
File 4	Reference sheet
Study plan	To your exam date, when you gave one
Code list	Who has each copy, for a class



Start with page 2, together if you can.
Your study plan is on page 6.

Sample