



Course Title: Preparatory Mathematics I

Course CodeA: MATH 001

Major Exam 1

Thursday 18-9-2025

Term 251

Test Duration: 60 Minutes

Name: _____ **ID:** _____

Section: _____

For the students:

- You may use a scientific calculator that does not have programming or graphing capabilities. NO borrowing calculators.
- NO talking or looking around during the examination.
- NO mobile phones. If your mobile is seen or heard, your exam will be taken immediately.
- Show all your work and be organized.
- You may use the back of the pages for extra space, but be sure to indicate that on the page with the problem.
- This exam consists of 5 pages and 3 questions.

GRADING:

Questions	Q1	Q2	Q3	Total	Total
Marks	/10	/10	/10	/30	/15

Question 1: Choose the correct answer

(1 mark each - 10 marks)

- 1) Find the **degree** of the polynomial $7x^7y^6 - 17x^{11}y^8 + 12x^3y^2 + 5x$
- a) 16
 - b) 13
 - c) 5
 - d) 1
- 2) Find the **distance** between -12 and 30
- a) -42
 - b) -18
 - c) 42
 - d) 18
- 3) Evaluate $\frac{|x-y|}{2y+1}$, for $x = -3$ and $y = -1$
- a) 4
 - b) -4
 - c) 2
 - d) -2
- 4) Multiply $(3x - 7y)(3x + 7y)$
- a) $9x^2 - 42xy - 49y^2$
 - b) $9x^2 - 49y^2$
 - c) $3x^2 - 49y^2$
 - d) $9x^2 + 49y^2$
- 5) $(9x^5y^2 - 12xy^3 + 7y) - (6x^5y^2 - 9xy^3 - 4y)$
- a) $3x^5y^2 - 21xy^3 + 11y$
 - b) $3x^5y^2 - 21xy^3 + 4y$
 - c) $3x^5y^2 - 3xy^3 + 11y$
 - d) $3x^5y^2 - 3xy^3 + 3y$

6) Factor: $x^3 - 64$

- a) $(x + 4)(x^2 + 4x + 16)$
- b) $(x + 4)(x^2 - 4x + 16)$
- c) $(x - 4)(x^2 - 4x + 16)$
- d) $(x - 4)(x^2 + 4x + 16)$

7) $\sqrt{45x} + \sqrt{20x}$

- a) $\sqrt{5x}$
- b) $5\sqrt{5x}$
- c) $\sqrt{5}$
- d) $5\sqrt{5}$

8) Factor $x^2 + 64$

- a) $(x - 8)(x + 8)$
- b) $(x - 8)(x - 8)$
- c) $8(x - 8)$
- d) *prime*

9) $\frac{\sqrt[3]{135x^4}}{\sqrt[3]{5x}}$

- a) $3x$
- b) $3\sqrt[3]{x}$
- c) $27x^3$
- d) $3\sqrt[3]{3x}$

10) $(x + 6)^2$

- a) $x^2 + 12x + 36$
- b) $x^2 - 12x + 36$
- c) $x^2 + 36$
- d) $x^2 - 36$

Question#2:

(10 marks)

Simplify the following expressions.

i) $\left(\frac{12 a^3 b^9}{24 a^7 b^{-2}} \right)^{-3}$

(3.5 marks)

ii) $\sqrt{5x^2} \cdot \sqrt{15x}$ (Assume that x is nonnegative)

(3 marks)

iii) $29 - 3[8 - 2(x - 5)]$

(3.5 marks)

Question #3:

(10 marks)

A) Perform the indicated operations and simplify.

i) $\frac{2x+8}{7} \cdot \frac{5x+1}{5x^2+21x+4}$ (write the excluded value) (2.5 marks)

ii) $\frac{2}{x^2-3x-28} - \frac{6}{x+4}$ (Write the excluded value) (3 marks)

B) Factor completely.

i) $x^3 - 8x^2 - 2x + 16$ (2.5 marks)

ii) $3x^3 - 27x$ (2 marks)

Good Luck☺

Prince Sultan University
College of Sciences and Humanities
PYP-MATH



Course Title: Preparatory Mathematics I

Course CodeA: Math 001

Major Exam 1

Term 252

Thursday 22-1-2026

Test Duration: 60 Minutes

Name: _____ **ID:** _____

Section: _____

For the students:

- You may use a scientific calculator that does not have programming or graphing capabilities. NO borrowing calculators.
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- NO mobile phones. If your mobile is seen or heard, your exam will be taken immediately.
- Show all your work and be organized.
- You may use the back of the pages for extra space, but be sure to indicate that on the page with the problem.
- This exam consists of 5 pages and 3 questions.

GRADING:

Questions	Q1	Q2	Q3	Total	Total
points	/10	/10	/10	/30	/15

Question1A : Choose the correct answer

(1 point each=10points)

1) Find the degree of the polynomial $7x^2y^6 - 5x^3y^2 + 2x^2y^2 + 5x$

- a) :
- b) 5
- c) 4
- d) 1

2) Find the distance between -13 and 55

- a) -42
- b) -68
- c) 42
- d) 68

3) Evaluate $|x - y| + 2xy$, for $x = -2$ and $y = 2$

- a) 4
- b) -4
- c) 8
- d) -8

4) Multiply $(5x - 2y)(5x + 2y)$

- a) $25x^2 - 20xy - 4y^2$
- b) $25x^2 - 4y^2$
- c) $25x^2 + 20xy + 4y^2$
- d) $25x^2 + 4y^2$

5) $(10x^5y^2 - 19xy^3 + 7y) - (7x^5y^2 + 2xy^3 - 4y)$

- a) $3x^5y^2 - 21xy^3 + 11y$
- b) $3x^5y^2 - 21xy^3 + 3y$
- c) $3x^5y^2 - 17xy^3 + 11y$
- d) $3x^5y^2 - 17xy^3 + 3y$

6) Factor: $x^3 + 8$

- a) $(x + 2)(x^2 + 2x + 4)$
- b) $(x + 2)(x^2 - 2x + 4)$
- c) $(x - 2)(x^2 - 2x + 4)$
- d) $(x - 2)(x^2 + 2x + 4)$

7) $\sqrt{8x} + \sqrt{18x}$

- a) $\sqrt{2x}$
- b) $5\sqrt{2x}$
- c) $\sqrt{2}$
- d) $5\sqrt{2}$

8) Factor $x^2 + 9$

- a) $(x - 3)(x + 3)$
- b) $(x + 3)(x + 3)$
- c) $3(x - 3)$
- d) *prime*

9) Simplify $\sqrt{50x^3}$

(Assume that x is nonnegative)

- a) $5\sqrt{2x}$
- b) $5x\sqrt{2x}$
- c) $2\sqrt{5x}$
- d) $2x\sqrt{5x}$

10) $(x - 3)^2$

- a) $x^2 + 6x + 9$
- b) $x^2 - 6x + 9$
- c) $x^2 + 9$
- d) $x^2 - 9$

Question#2:

(10points)

A. Simplify the following expressions.

i) $\left(\frac{6x^2y^6}{12x^4y^3}\right)^{-2}$

(3.5 points)

ii) $\frac{\sqrt[5]{64x^6}}{\sqrt[5]{2x}}$

1 point)

iii) $9x^2 - 3[4 - 2(x^2 - 7)]$

(3.5 points)

B. Rationalize the denominator. (Show all your steps)

(2 points)

Question #3:

(10points)

A) Perform the indicated operations, write the excluded value.

B) $\frac{x+8}{3} \div \frac{x^2+9x+8}{x+1}$

(2.5 points)

ii) $\frac{5}{x^2-16} - \frac{3}{x+4}$

(3 points)

B) Factor completely.

i) $x^3 + 6x^2 + 2x + 12$

(2.5 points)

ii) $5x^3 - 35x^2$

(2 points)

GOOD LUCK

Prince Sultan University
College of Sciences and Humanities
PYP-MATH



Course Title: Preparatory Mathematics I

Course CodeB: Math 001

Thursday 02 -07 – 2026

Midterm Exam 253

Test Duration: 60 Minutes

Name: _____ **ID:** _____

Section: _____

For the students:

- You may use a scientific calculator that does not have programming or graphing capabilities. NO borrowing calculators.
- NO talking or looking around during the examination.
- NO mobile phones. If your mobile is seen or heard, your exam will be taken immediately.
- Show all your work and be organized.
- You may use the back of the pages for extra space, but be sure to indicate that on the page with the problem.
- This exam consists of 5 pages and 3 questions.

GRADING:

Questions	Q1	Q2	Q3	Total	Total
points	/20	10	/10	/40	/20

Question 1B: Choose the correct answer

(2 point each = 20points)

1) $\sqrt{27x} - \sqrt{75x}$
a) $-2\sqrt{3x}$
b) $8\sqrt{3x}$
c) $2\sqrt{3x}$
d) $-16\sqrt{3x}$

2) $(x + 5)^2$

a) $x^2 - 10x + 25$
b) $x^2 + 10x + 25$
c) $x^2 + 25$
d) $x^2 - 25$

3) Simplify $\frac{\sqrt[3]{24x^5}}{\sqrt[3]{3x}}$

a) $2\sqrt[3]{x}$
b) $2x$
c) $2x\sqrt{2x}$
d) $2x\sqrt[3]{x}$

4) Factor: $x^3 + 8$

a) $(x + 2)(x^2 - 2x + 4)$
b) $(x + 2)(x^2 + 2x + 4)$
c) $(x - 2)(x^2 - 2x + 4)$
d) $(x - 2)(x^2 + 2x + 4)$

5) **Factor** $x^2 + 16$

a) $(x - 4)(x + 4)$
b) *prime*
c) $(x + 4)(x + 4)$
d) $4(x - 4)$

6) Multiply $(3x - 2)(3x + 2)$

- a) $9x^2 - 12x - 4$
- b) $9x^2 + 4$
- c) $3x^2 - 4$
- d) $9x^2 - 4$

7) Find the degree of the polynomial $8x^7y^6 - 2x^4y^2 + 9x^2y^2 + 5xy$

- a) 2
- b) 6
- c) 4
- d) 13

8) Evaluate $|x - 2| + 3x$, for $x = -2$

- a) 4
- b) -2
- c) -14
- d) -24

9) Find the distance between -43 and 25

- a) -18
- b) 68
- c) 18
- d) -68

10) $(10x^5y^2 - 19xy^3 + 7y) - (7x^5y^2 + 2xy^3 - 4y)$

- a) $3x^5y^2 - 17xy^3 + 11y$
- b) $3x^5y^2 - 21xy^3 + 3y$
- c) $3x^5y^2 - 21xy^3 + 11y$
- d) $3x^5y^2 - 17xy^3 + 3y$

Question #2:

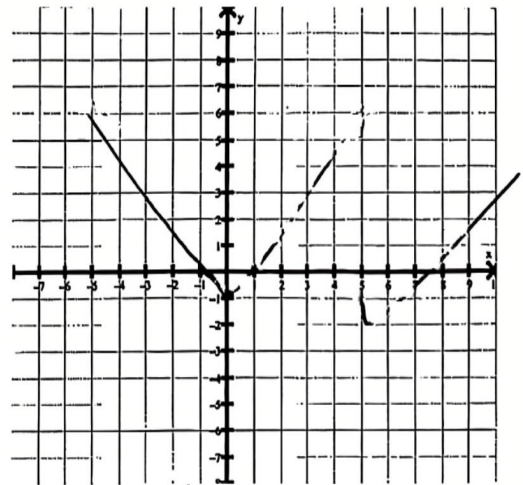
(10 points)

A. Graph the following equation and find the intercepts.

(4 points)

$$y = |x| - 1$$

x	y	(x, y)
-1		
0		
1		



x-intercepts	
y-intercepts	

B. Solve the equations. Then determine whether the equation is an identity, a conditional equation, or an inconsistent equation. (Write the solution set)

a) $\frac{2}{x-2} + \frac{3}{x+2} = \frac{8}{x^2-4}$

(3.5 points)

b) $3(x-5) - 4(x+1) = x+5$

(2.5 points)

Question#3:

(10 points)

A) Factor completely.

$$x^3 + 9x^2 + 3x + 27$$

(2.5 points)

B) Simplify the following expression.

$$\left(\frac{16x^3y^9}{2x^8y^{-3}}\right)^2$$

(3.5 points)

C) Rationalize the denominator. (Show all your steps)

(2 points)

$$\frac{5}{7-\sqrt{5}}$$

D) Multiply and write the excluded.

$$\frac{x+6}{x+5} \cdot \frac{x^2+7x+10}{x+2}$$

(2 points)

GOOD LUCK