



COURSE DETAILS:

ORIENTATION MATHEMATICS I		MATH 001	MAJOR EXAM I A
Semester:	Fall Semester --Term 181		
Date:	Sunday October 21, 2018		
Time Allowed:	90 minutes		

STUDENT DETAILS:

Student Name:	
Student ID Number:	
Section:	
Instructor's Name:	

INSTRUCTIONS:

- 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.

GRADING:

	Page 1	Page 2	Page 3	Page 4	Page 5	Total	Total
Questions							
Marks	10	10	20	18	22	80	20

- 1) The set of **all integers in the set** $A = \left\{1.\bar{3}, \sqrt{9}, -\frac{20}{5}, -2\pi, 0, \sqrt{-2}, \sqrt[3]{-125}, \sqrt{11}, 1000\right\}$ is
- A) $\{0, 3, 1000\}$
 B) $\{1.\bar{3}, -5, -4\}$
 C) $\left\{-5, -\frac{20}{5}, 0, \sqrt{9}, 1000\right\}$
 D) $\left\{\sqrt{9}, -\frac{20}{5}, \sqrt[3]{-125}, 1000\right\}$
- 2) A circle whose center is $C(1, 2)$ and radius 3 has the equation:
- A) $(x - 1)^2 + (y - 2)^2 = 9$
 B) $(x + 1)^2 + (y + 2)^2 = 9$
 C) $x^2 - x + y^2 - 2y = 9$
 D) $x^2 + x + y^2 + 2y = 9$
- 3) The distance between $\frac{7}{15}$ and $\frac{-1}{21}$ is
- A) $\frac{-18}{35}$
 B) $\frac{18}{35}$
 C) $\frac{44}{105}$
 D) $\frac{-44}{105}$
- 4) Simplify $\sqrt{100x^2 + 100y^2}$
- A) $10\sqrt{x^2 + y^2}$
 B) $10(|x| + |y|)$
 C) $10(x + y)$
 D) $100\sqrt{x^2 + y^2}$
- 5) The midpoint of the line segment from $A(0, 5)$ to $D(7, 2)$ is
- A) $(7, 9)$
 B) $(3.5, 0)$
 C) $(3.5, 3.5)$
 D) $(7, 3)$

You must write the correct answer to each question in the box below

Question	1	2	3	4	5
Answer					

6) Perform the indicated operations and simplify $(\sqrt{a}-b)(\sqrt{a}+b)$:

- A) $\sqrt{a}+b$
- B) $a-b^2$
- C) $a-b$
- D) $\sqrt{a}-b$

7) Which expression is equivalent to $(4x^3-2)^2$:

- A) $16x^6-16x^3+4$
- B) $8x^6-8x^3+4$
- C) $16x^5-16x^3-4$
- D) $16x^6+8x^3-4$

8) Rationalize the denominator: $\frac{1}{\sqrt[7]{x^3}}$

- A) $\frac{1}{x^{\frac{3}{7}}}$
- B) $\frac{\sqrt[4]{x^7}}{x}$
- C) $\frac{\sqrt[7]{x^4}}{x}$
- D) $\frac{1}{x^{\frac{7}{3}}}$

9) Factor the trinomial: x^2-6x+8 :

- A) $(x+8)(x-2)$
- B) $(x-8)(x+2)$
- C) $(x+4)(x-2)$
- D) $(x-4)(x-2)$

10) The distance of the line segment from $C(0,6)$ to $D(-2,5)$ is

- A) 1.8
- B) 3.4
- C) 2.2
- D) 1.3

You must write the correct answer to each question in the box below

Question	6	7	8	9	10
Answer					

Q11) (4 pts) If $A = \{x | x \geq -2\}$ and $B = \{x | x < 4\}$, find and graph $A \cap B$.

Q12) (4 pts) Simplify $\left(\frac{x^{1/2}y^2}{2y^{1/4}}\right)^4 \left(\frac{4x^{-2}y^{-4}}{y^2}\right)^{1/2}$. Assume all variables represent positive real numbers.

Q13) (4 pts) Simplify $\sqrt[3]{\frac{54x^2y^7}{2x^5y}}$

Q14) (4 pts) Solve the equation: $(x-2)(x+5) = (x-7)(x-8)$

Q15) (4 pts) Solve the following equation for x : $P = r + \frac{xy}{2}$

Q16) (6 pts) Write the value or values of the variable that must be excluded from the solution set.

Then solve the equation: $\frac{1}{3-t} + \frac{4}{3+t} + \frac{15}{9-t^2} = 0$

Q17) (6 pts) Perform the division and simplify $\frac{x+3}{4x^2-9} \div \frac{x^2+7x+12}{2x-3}$

Q18) (6 pts) Factor the expressions completely:

a) $3x^3 - x^2 - 12x + 4$

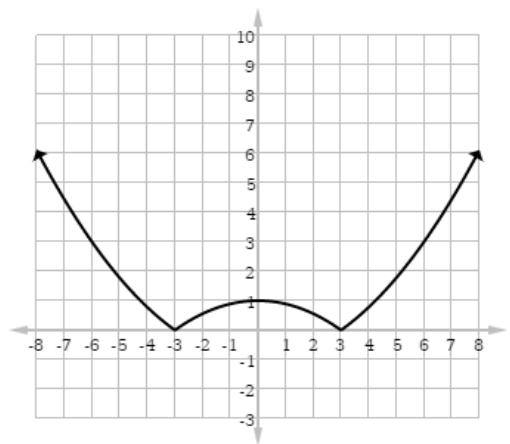
b) $(a^2 + 2a)^2 - 2(a^2 + 2a) - 3$

Q19) (5 pts) Solve the equation $6x^{\frac{2}{3}} - 216 = 0$

Q20) (6 pts) Make a **table of values**, and sketch a graph of the equation: $y = \frac{1}{4}x^2 - 1$

Q21) (6 pts) Consider the graph below:

- (i) Write down the x-intercept(s).
- (ii) Write down the y-intercept(s).
- (iii) What kind of symmetry does it have?



Q22) (5 pts) Find the equation of the line through $(-2, 3)$ that is parallel to the line $2x + 5y + 10 = 0$