



COURSE DETAILS:

ORIENTATION MATHEMATICS II		MATH 002	MAJOR EXAM I	A
Semester:	Fall Semester --Term 191			
Date:	Sunday October 20, 2019			
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	Total	Total
Questions						
Marks	8	8	20	24	60	15

Q.1A (16 points) Choose the correct answer

1. Solve $6 + 4\ln x = 26$

- A) 5
- B) e^{20}
- C) e^5
- D) $\ln 5$

2. Find the **domain** of $f(x) = \log_3(2x - 8)$

- A) $(4, \infty)$
- B) $(8, \infty)$
- C) $[4, \infty)$
- D) $(-4, \infty)$

3. If θ is an acute angle and $\sin \theta = \frac{1}{2}$, **find** $\sec\left(\frac{\pi}{2} - \theta\right)$

- A) 0.93
- B) $\frac{1}{2}$
- C) 2
- D) $\frac{\sqrt{3}}{2}$

4. Determine the **quadrant** in which the terminal side of the angle $\theta = -\frac{5\pi}{6}$ lies.

- A) Q2
- B) Q3
- C) Q1
- D) Q4

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

Question	1	2	3	4
Answer				

A5. A circle has a radius of 16 feet. Find the **length of an arc** intercepted by a central angle of 150° .

- A) 19.20 feet
- B) 2400 feet
- C) 29.45 feet
- D) 41.89 feet

6. Determine the **domain** and the **asymptote** of the function $f(x) = 5 - e^{-x}$

- A) Domain: $(-\infty, \infty)$; Asymptote: $y = 5$
- B) Domain: $(-\infty, \infty)$; Asymptote: $x = 5$
- C) Domain: $(-\infty, \infty)$; Asymptote: $x = -1$
- D) Domain: $(-\infty, \infty)$; Asymptote: $x = 1$

7. If $P(5, -5)$ is a point on the terminal side of angle θ . Find the **exact value** of $\csc \theta$.

- A) $-\frac{\sqrt{2}}{2}$
- B) $\frac{\sqrt{2}}{2}$
- C) $-\sqrt{2}$
- D) -1

8. Find the **degree measure** of the angle: $\theta = 2.6$ rad.

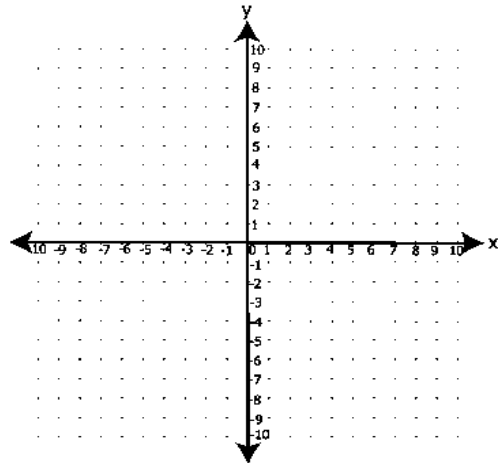
- A) 0.05°
- B) 148.97°
- C) 74.48°
- D) 234°

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

Question	5	6	7	8
Answer				

Q.2A (4 points): Expand the logarithmic expression as much as possible and **simplify**. $\ln \left(\frac{x^6 \sqrt{x^3 + 4}}{e^3 (x+2)^7} \right)$

Q.3 (6 points): Sketch the graph of $f(x) = \log_2(x+4) + 2$ and give the **equation of the asymptote** and the **domain** and **range** of $f(x)$.



Q.4 (4 points): The value of the house is given by the exponential function, $A = 150e^{0.0645t}$ where A is the value of the house, in thousands of dollars t years after 2015. **When (what year)** will the house be worth \$250 thousands?

Q.5 (6 points): Given that $\cos \theta = -\frac{5}{8}$ and $\tan \theta > 0$. Find the **exact value of the remaining trigonometric functions** of the angle θ .

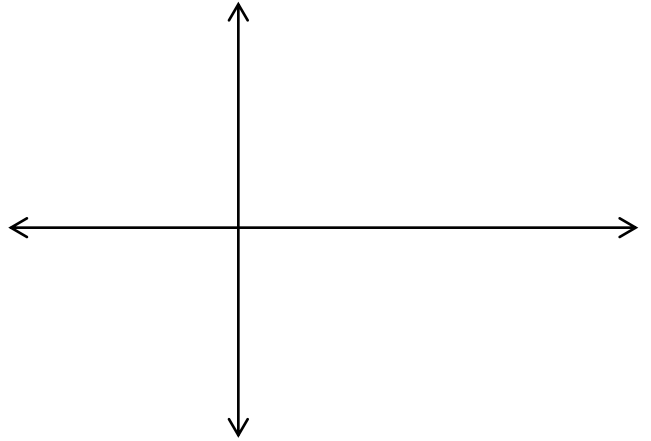
Q.6A (5 points): Find the **exact** value. (DO NOT use the calculator directly and **SHOW** your steps)

1) $\sec(225^\circ)$

2) $\sin\left(-\frac{31\pi}{3}\right)$

Q.7 (7 points): Determine the **amplitude**, **period**, and **phase shift**, then **sketch the graph of one**

period $y = 5\cos\left(\frac{1}{2}x - \frac{\pi}{2}\right)$



Q.8 (3+4 points) : Solve the following equations:

a) $9^x = 3^{2-x}$

b) $\log_4(x-3) + \log_4(x+5) = \log_4(2x+1)$

Q.9 (5 points): Find the **six trigonometric functions** for the angle θ for the given right triangle.

