MA1200 MIDTERM EXAM FRIDAY 9:05 AM -10:05 AM, E F G H

Honesty Pledge:

I pledge that the answers in this examination are my own and that I will not seek or obtain an unfair advantage in producing these answers. Specifically,

1.I will not plagiarize (copy without citation) from any source;

2. I will not communicate or attempt to communicate with any other person during the examination; neither will I give or attempt to give assistance to another student taking the examination; and

3. I will use only approved devices (e.g., calculators) and/or approved device models.

4. I understand that any act of academic dishonesty can lead to disciplinary action."

Please write "I pledge to follow the Rules on Academic Honesty and understand that violations may lead to severe penalties" onto the first examination answer sheet.

Q1. (30 points) Write $9x^2 - 16y^2 - 36x + 32y = 124$ into the standard form, find foci, center, and vertices, (asymptotes if it is a hyperbola), and sketch the graph of it.

Q2. (15 points) Find the largest possible domains and the ranges of the following functions:

$$f(x) = \log_2(4 - x^2) \quad \text{and} \quad g(x) = \log_2(8 - x^3).$$

Q3. (20 points) Express $\dfrac{-7x + 29}{(x+1)(x^2 - 4x + 13)}$ as partial fractions.

Q4. (20 points) Simplify $\cos(\sin^{-1}(-\frac{3}{5}) + \tan^{-1}(-\frac{5}{12}))$. (Hint: $\cos(A+B) = \cos A \cos B - \sin A \sin B$, $3^2 + 4^2 = 5^2$, $5^2 + 12^2 = 13^2$))

Q5. (15 points) Solve $\sin(2x + \pi/3) = 1/2$ in radians.