Instructions
1. No calculators or other electronic devices are allowed during this exam.
2. You may use one page of notes, but no books or other assistance during this exam.
3. Write your Name, PID, and Section on the front of your Blue Book.
4. Write the Version of your exam on the front of your Blue Book.
5. Write your solutions clearly in your Blue Book
   (a) Carefully indicate the number and letter of each question and question part.
   (b) Present your answers in the same order they appear in the exam.
   (c) Start each question on a new page.
6. Read each question carefully, and answer each question completely.
7. Show all of your work; no credit will be given for unsupported answers.

0. (1 point) Carefully read and complete the instructions at the top of this exam sheet.
1. (3 points) Find the area enclosed by the polar curve \( r = 3 \sqrt{1 - \cos(\theta)} \).

2. (6 points) Evaluate \( \int \frac{x^2 - 7}{(x + 1)(x - 2)} \, dx \).

3. (6 points) Determine the area of the region
   \[ S = \left\{ (x, y) \mid -2 < x \leq 0, \ 0 \leq y \leq \frac{1}{\sqrt{x + 2}} \right\}, \]
   if it is finite.
4. (4 points) Evaluate the integral \( \int e^{3ix} \cos(4x) \, dx \) using complex exponentials. Leave the result in complex exponential form.
5. (4 points) By applying the Comparison Theorem, determine whether \( \int_0^\infty \frac{\cos^2(x)}{1 + x^2} \, dx \) is convergent or divergent.