

# Mathematics Test Assignment - Equation Rendering Demo

Total Points: 100 | Questions: 5 | Date: November 17, 2025

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## Instructions

This assignment demonstrates professional equation rendering in PDF documents. All equations should appear with research paper quality formatting. Please solve the following problems showing all work clearly.

**Important:** Show all work for full credit. Write legibly and organize your answers clearly.

**Question 1**

25 points

Medium

Long  
Answer

Solve the quadratic equation:

$$x^2 + 5x + 6 = 0$$

Use the quadratic formula:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Where

$$a = 1,$$

$$b = 5$$

and

$$c = 6$$

**Answer:**

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**Question 2**

20 points

Medium

Long  
Answer

Calculate the definite integral:

$$\int_0^{\pi} \sin(x) \, dx$$

Show all steps in your calculation.

**Answer:**

**Question 3**

15 points

Easy

Short  
Answer

Find the limit:

$$\lim_{x \rightarrow 0} \frac{\sin(x)}{x}$$

You may use L'Hôpital's rule or the standard limit identity.

**Answer:**

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**Question 4**

25 points

Hard

Long  
Answer

Given the system of linear equations:

$$2x + y = 5$$

$$x + 3y = 7$$

Find the values of

 $x$

and

$y$

**Answer:**

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**Question 5**

15 points

Easy

Multiple  
Choice

What is the value of

$$e^{i\pi} + 1 \quad ?$$

**A.**

$$0$$

**B.**

$$1$$



**C.**

$$-1$$

**D.**

$$i$$