## Assignment Title

Name: $\qquad$
Date: $\qquad$

## Instructions

Answer all the questions and return to the teacher by the end of the week. Section A questions shouldn't cause you any trouble. Section B is designed to be more challenging.

## Section A

1. Define the term 'minimal polynomial'.
2. Evaluate the following integral

$$
\int_{2}^{x} \sinh 2 y \mathrm{~d} y
$$

in the case where:
(a) $x=5$
$\qquad$
$\qquad$
(b) $x=9$
$\qquad$
3. Find the determinant of the following $3 x 3$ matrix:

$$
\left(\begin{array}{lll}
1 & 6 & 4 \\
3 & 1 & 7 \\
9 & 4 & 5
\end{array}\right)
$$

$\qquad$
$\qquad$

## Section B

1. Determine the following limit:

$$
\lim _{x \rightarrow+\infty} \frac{\sin x}{x^{2}}
$$

2. Prove Pythagoras' Theorem.
3. Describe the Gram-Schmidt Algorithm.
