St John Baptist De La Salle Catholic School, Addis Ababa

Homework 1

2nd Quarter

Aaron GK

December 12, 2024

Notes, and use of other aids is allowed. Read all directions carefully and write your answers in the space provided. To receive full credit, you must show all of your work. **Cheating, plagiarism or indications of cheating and strictly forbidden**.

Information

- The homework is due on **Monday**, **December 16th**.

- You should work on the homework project **in groups** and consult me if you have any questions.

- For purposes of neatness and simplicity of grading, you **must** do the homework on an **A-4 paper**.

Questions on Ampere's and Biot-Savart Laws

1. Using the Biot-Savart Law, derive an expression for the magnetic field of

   (I) a straight current carrying wire of finite length.

   (II) an infinitely long solenoid.

2. Using Ampere's law, derive an expression for the magnetic field of

   (I) a toroid at its center

   (II) an infinitely long current carrying wire

   (III) a solenoid