**EvaluAIde Beta Bonus Assignment – College Physics II: Electrostatics**

**Instructions:**

* Answer all questions in detail. Show your work and reasoning for each part.
* Your submission must be a single PDF file. You may type your solutions or handwrite and scan them.
* This assignment is for bonus credit and will help improve our grading tools—thank you for participating!
* Submit your PDF via the usual course submission portal by the posted deadline.

**Questions**

1. **Coulomb’s Law:**  
   Two point charges, and , are placed apart in vacuum.  
   a) Calculate the magnitude and direction of the electrostatic force on each charge.  
   b) Is the force attractive or repulsive?
2. **Electric Field of a Point Charge:**  
   What is the magnitude and direction of the electric field at a point away from a point charge?
3. **Electric Field from Multiple Charges:**  
   Two charges, and , are fixed apart.  
   a) Find the electric field at the midpoint between them (magnitude and direction).  
   b) If a test charge is placed at the midpoint, what force does it experience (magnitude and direction)?
4. **Electric Potential (Point Charges):**  
   What is the electric potential at a point from a point charge? (Assume zero potential at infinity.)
5. **Potential Difference and Work:**  
   An electron moves from point A (potential = ) to point B (potential = ).  
   a) What is the potential difference ?  
   b) How much work is done by the electric field on the electron during this move?