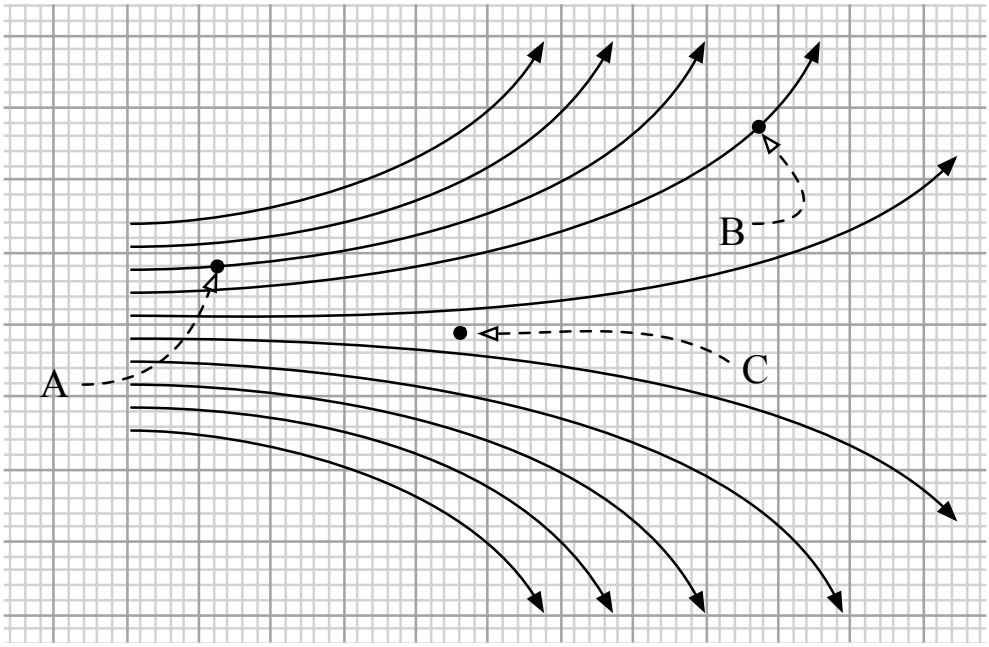
Analyzing an Electric Field using Field Lines **Name** _____

Physics II **Period** _____



(Major grid lines are 1 cm apart.)

An electric field is established in a vacuum as represented by the field line diagram above.

1. Rank the strengths of the electric field at points A, B, and C from weakest to strongest. Justify your ranking.

2. At which of the lettered points is the electric potential greatest? Give an account of your reasoning.

3. An electron is released from rest at point C. Qualitatively describe the motion of the electron in terms of its direction, speed, and acceleration after its release.

4. The potential at point C is known to be 30 V. Suppose that the electron released from rest eventually moves from point C to another position at which the electric potential is 40 V. Find the electron's kinetic energy and speed at that moment.

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5. The potential difference between points A and C is about 200 V. Estimate the strength of the electric field between them. Note any assumptions or approximations you make in your estimation.

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6. On the diagram sketch the equipotential line that passes through point B and at least four other electric field lines.