



AP[®] Physics C: Electricity and Magnetism 2002 Scoring Commentary

The materials included in these files are intended for use by AP teachers for course and exam preparation in the classroom; permission for any other use must be sought from the Advanced Placement Program[®]. Teachers may reproduce them, in whole or in part, in limited quantities, for face-to-face teaching purposes but may not mass distribute the materials, electronically or otherwise. These materials and any copies made of them may not be resold, and the copyright notices must be retained as they appear here. This permission does not apply to any third-party copyrights contained herein.

These materials were produced by Educational Testing Service[®] (ETS[®]), which develops and administers the examinations of the Advanced Placement Program for the College Board. The College Board and Educational Testing Service (ETS) are dedicated to the principle of equal opportunity, and their programs, services, and employment policies are guided by that principle.

The College Board is a national nonprofit membership association dedicated to preparing, inspiring, and connecting students to college and opportunity. Founded in 1900, the association is composed of more than 4,200 schools, colleges, universities, and other educational organizations. Each year, the College Board serves over three million students and their parents, 22,000 high schools, and 3,500 colleges, through major programs and services in college admission, guidance, assessment, financial aid, enrollment, and teaching and learning. Among its best-known programs are the SAT[®], the PSAT/NMSQT[®], and the Advanced Placement Program[®] (AP[®]). The College Board is committed to the principles of equity and excellence, and that commitment is embodied in all of its programs, services, activities, and concerns.

Copyright © 2002 by College Entrance Examination Board. All rights reserved. College Board, Advanced Placement Program, AP, SAT, and the acorn logo are registered trademarks of the College Entrance Examination Board. APIEL is a trademark owned by the College Entrance Examination Board. PSAT/NMSQT is a registered trademark jointly owned by the College Entrance Examination Board and the National Merit Scholarship Corporation. Educational Testing Service and ETS are registered trademarks of Educational Testing Service.

**AP[®] PHYSICS C: ELECTRICITY AND MAGNETISM
2002 SCORING COMMENTARY**

Question 1

Sample 1 (Score 15)

This student uses the integration method in part (c).

Sample 2 (Score 12)

This student loses 1 point in part (a) for an incorrect calculation of the length of the rod. The numerical answers to parts (b) and (d) received credit because they were consistent with the incorrect value of the charge from part (a). In part (d), another point was lost because “toward the arc of charge” is not specific enough for the direction. A third point is lost in (e) because no direction is indicated.

Question 2

Sample 1 (Score 15)

This student uses the time constant in part (b) to determine the capacitance. In part (c), both the best fit curve and battery resistance arguments are used.

Sample 2 (Score 12)

This student simply makes no attempt to solve part (b).

Question 3

Sample 1 (Score 15)

This student carries more digits through the calculations than are shown in the scoring guideline, and thus ends up with an answer to part (d)(i) that is somewhat different from the outlined solution, but nonetheless correct.

Sample 2 (Score 13)

This student loses 1 point in part (b); the point at the y -intercept is correct, but because no other specific point is drawn and the value at which the line crosses the x -axis is so inconsistent with the student’s equation, the intended slope of the line is unclear. A second point is lost for missing units in (c) and (d)(i).