Reminders 2-12-08:
- Next Webassign Due February 12
- Electric Field Conceptual Questions Due 2/14
- Start Reading Chapter 16

Objectives:
- Electric Fields and Conductors
- Electric Potential
- Electrical Potential Energy
- Electrical Potential Due to a Point Charge

Exam Avg 67%

Webassign #4

$q_3 = 12.0 \times 10^{-9} C$

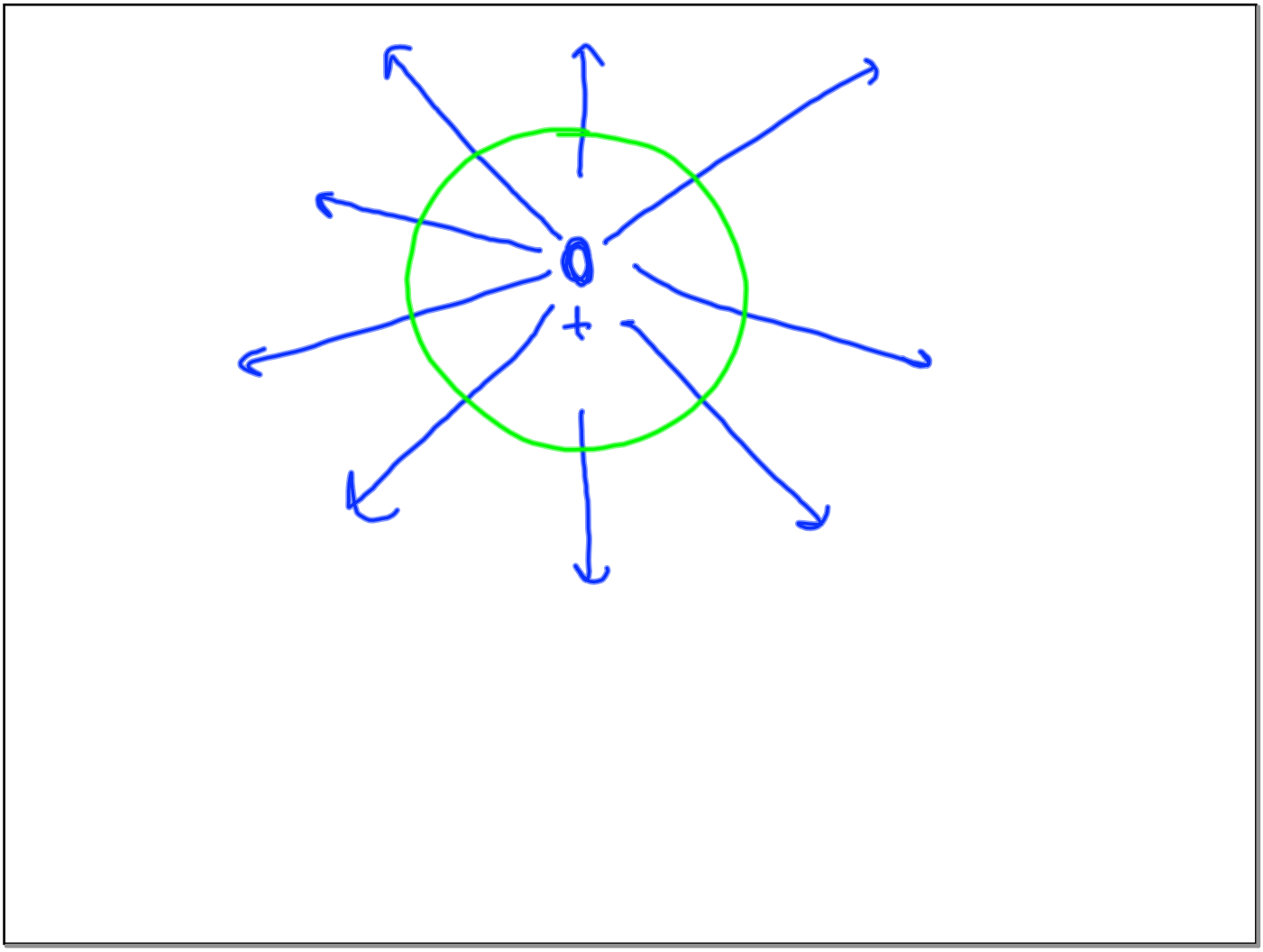
$$F_{13} = F_{23}$$

$$\frac{K|q_1||q_3|}{(.600+x)^2} = \frac{K|q_2||q_3|}{x^2}$$

$$\frac{|q_1|}{(.6+x)^2} = \frac{|q_2|}{x^2}$$

$$x^2|q_1| = (.6+x)^2|q_2|$$

$$x\sqrt{q_1} = (x+.6)\sqrt{q_2}$$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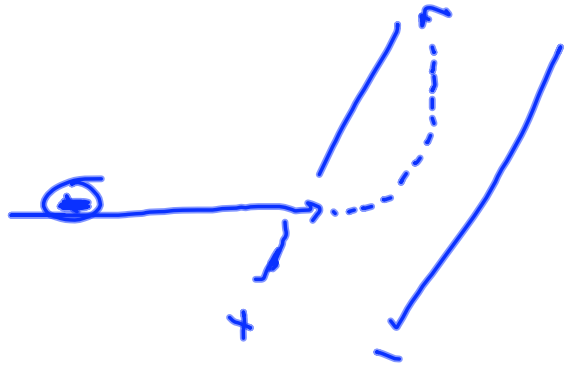
$$F = ma = qE$$

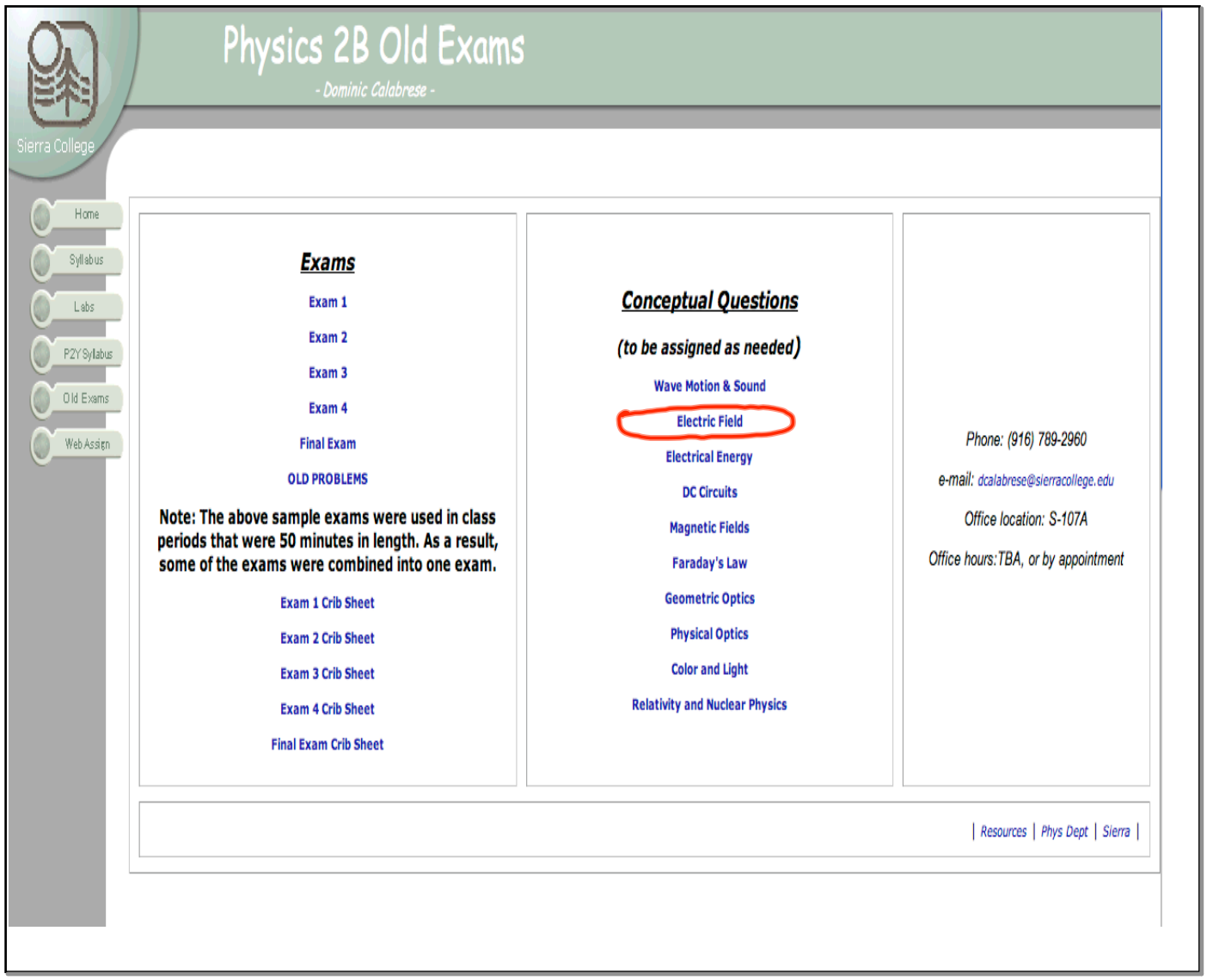
$$a = \frac{qE}{m}$$

$$\Delta x = v_0 t + \frac{1}{2} a t^2$$

$$v_f^2 = v_i^2 + 2a\Delta x$$

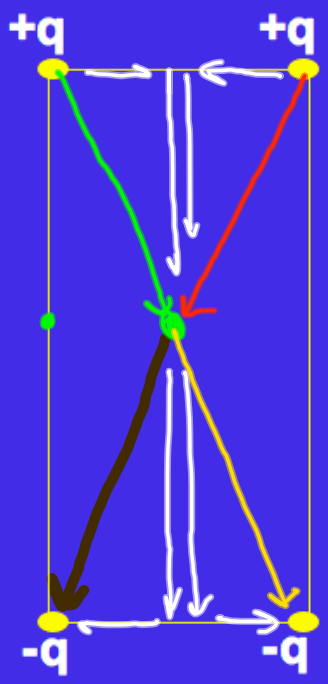
$$v_f = v_i + at$$

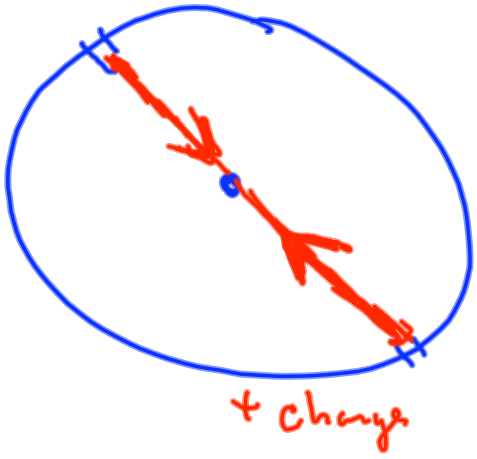



Physics 2B Old Exams
- Dominic Calabrese -
Sierra College
Home
Syllabus
Labs
P2Y Syllabus
Old Exams
Web Assign
Exams
Exam 1
Exam 2
Exam 3
Exam 4
Final Exam
OLD PROBLEMS
Note: The above sample exams were used in class periods that were 50 minutes in length. As a result, some of the exams were combined into one exam.
Exam 1 Crib Sheet
Exam 2 Crib Sheet
Exam 3 Crib Sheet
Exam 4 Crib Sheet
Final Exam Crib Sheet
Conceptual Questions
(to be assigned as needed)
Wave Motion & Sound
Electric Field
Electrical Energy
DC Circuits
Magnetic Fields
Faraday's Law
Geometric Optics
Physical Optics
Color and Light
Relativity and Nuclear Physics
Phone: (916) 789-2960
e-mail: dcalabrese@sierracollege.edu
Office location: S-107A
Office hours:TBA, or by appointment
| Resources | Phys Dept | Sierra |

What is the direction of the electric field at the center of the rectangle?

What about at the center of a uniformly charged ring?



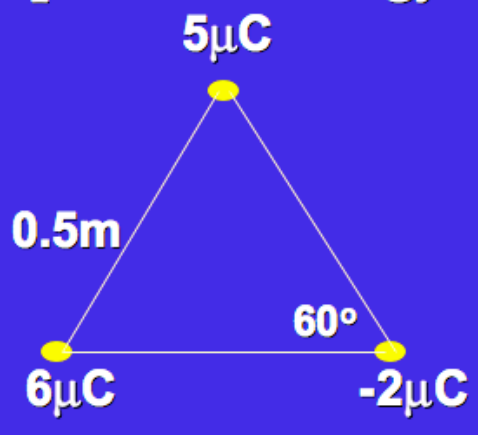


- Determine the number of electrons that pass between the terminals of a 9V battery when a when a 10 Watt lamp is on for 30 minutes.

- A proton is moving from right to left. It reaches a region with a uniform electric field that points from left to right. Does the electric field do positive or negative work on the proton? Does the electric potential energy increase or decrease?

- One electron volt (eV) is the change in potential energy of an electron when it moves through a potential difference of 1 volt. What is the change in potential energy of an electron in a TV tube that is accelerated through a potential difference of 30,000V. Express your answer in electron volts (eV) and Joules.

- Suppose we place 3 charges in the corners of an equilateral triangle. What is the electrostatic potential energy of this group of charges?

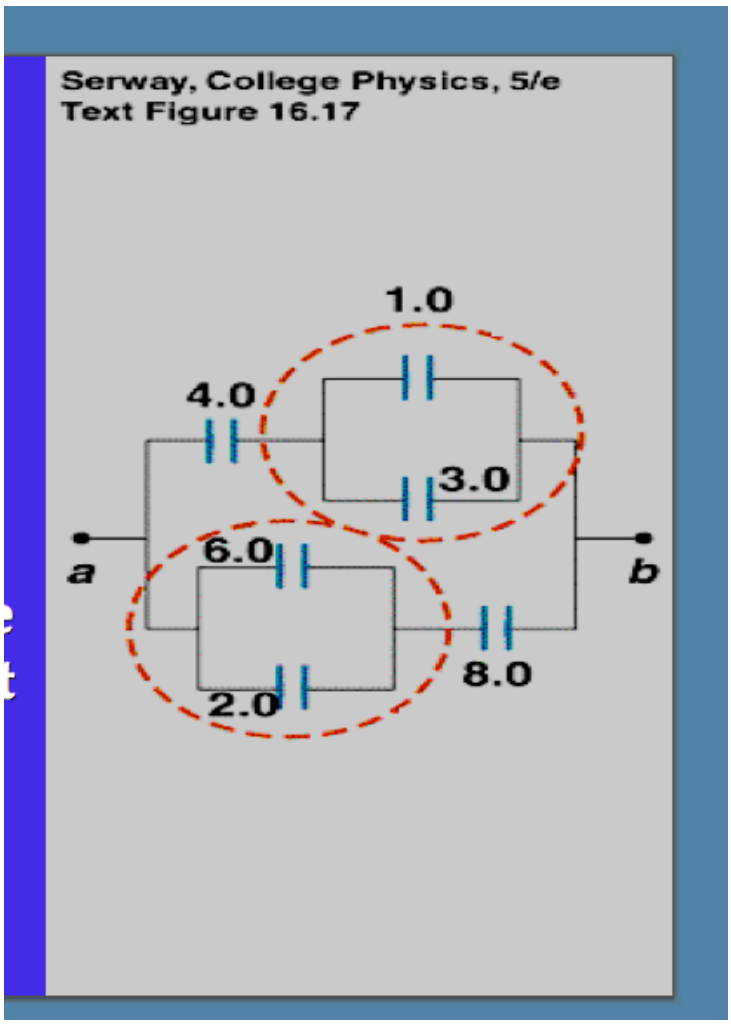


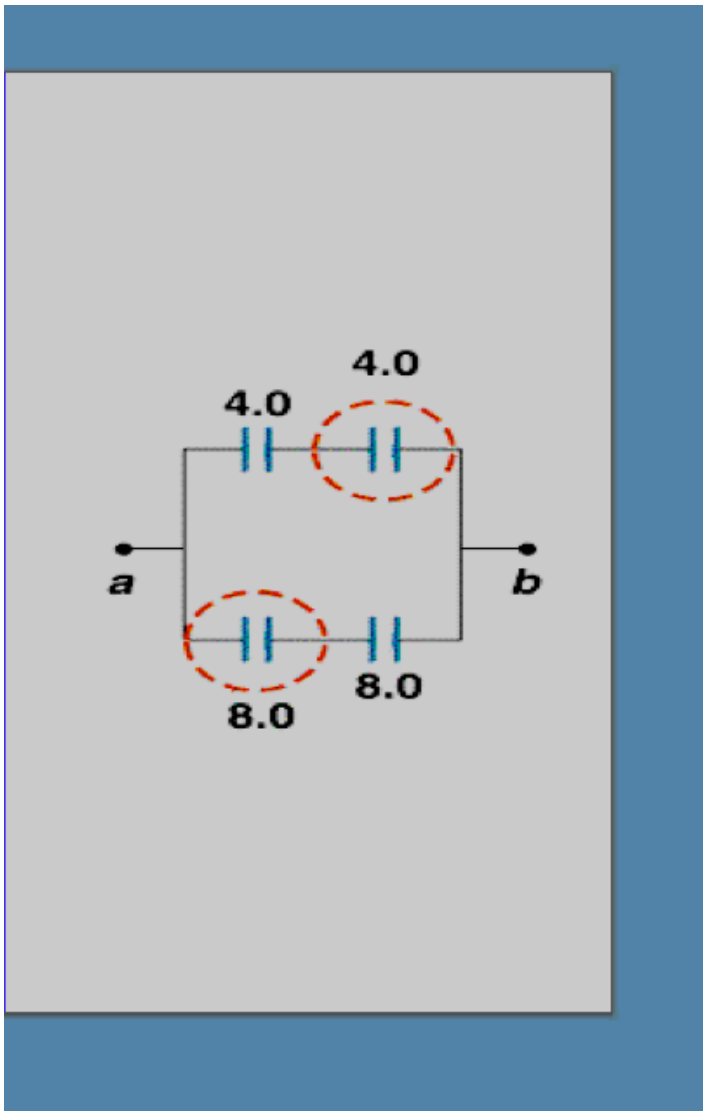
Answer: 0.14J

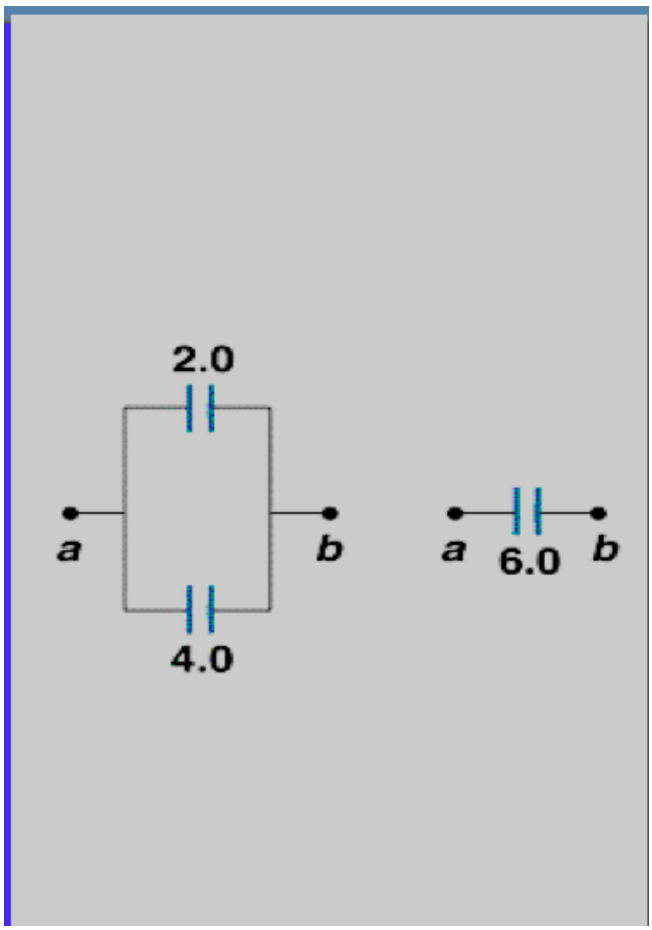
- A potential difference of 100 volts is applied between two parallel plates that are spaced 10.00 cm apart. What is the electric field (potential gradient) between the two plates?

- A proton is accelerated to a potential of 3kV in a uniform E-field that is produced by two parallel plates that are separated by 5.0cm. What are the subsequent kinetic energy and speed of the proton. Take home problem, repeat question for the electron.

Answer: 3keV=4.8×10^{-16}J; 7.6×10^{5}m/s: 3kV=4.8×10^{-16}J (if final V=-3kV); 3.2×10^{7}m/s


Serway, College Physics, 5/e
Text Figure 16.17
1.0
4.0
3.0
a
6.0
b
8.0
2.0


4.0
4.0
a
b
8.0
8.0


2.0
a
b
4.0
a
6.0
b

Capacitors

- A parallel plate capacitor is shown below. The area of each plate is A. Each dielectric takes up half the region between the plates. Show that

$$C=\varepsilon_o(\kappa_1+\kappa_2)A/2d$$