

**PHYSICS 230: GENERAL PHYSICS II**  
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**Topics on Review #1**

- **Electric Charge: conservation, conduction, induction, grounding, electroscopes**
- **Electric Force: Coulomb's Law, vector addition, symmetry**
- **Electric Fields: calculating, sketching, conductors**
- **Gauss's Law: flux, symmetry**
- **Electric Potential: potential energy, equipotentials, absolute potential**
- **Capacitance: combinations, stored energy, dielectrics**
- **Electric Current and Resistance: modeling, Ohm's Law, power**
- **Series and Parallel Resistors: equivalent resistance, light bulbs**
- **Kirchoff's Rules: multi-loop circuits, multiple batteries**
- **RC Circuits**

**Equations that will be provided on Review #1**

$F = \frac{kq_1q_2}{r^2}$	$k = 9 \times 10^9 \text{ N} \cdot \text{m}^2 / \text{C}^2$	
$\vec{E} = \vec{F} / q$	$\vec{E} = \frac{kq}{r^2} \hat{r}$	$\vec{E} = k \int \frac{dq}{r^2} \hat{r}$
	$\Phi_E = \oint \vec{E} \cdot d\vec{A} = Q_{in} / \epsilon_0$	$\Delta V = \Delta PE / q$
$\Delta V = \vec{E} \cdot d\vec{s}$	$V = \frac{kq}{r}$	$V = k \int \frac{dq}{r}$
$Q = CV$	$C = \epsilon_0 A / d$	$\epsilon_0 = 9 \times 10^{-12} \text{ C}^2 / \text{N} \cdot \text{m}^2$
$E = E_0 / K$	$C = KC_0$	
$E = \frac{1}{2} QV$	$E / V = \frac{1}{2} \epsilon_0 E^2$	
$V = IR$	$R = \rho L / A$	$P = IV$
$I = I_0 e^{-t/\tau}$	$\tau = RC$	