

Definitions:

Capacitance (100)

Fractional Change (102)

Capacitor (96)

Half-life (103)

Exponential Process (102, 102b, 103)

Relaxation Time (103b)

Farad (100)

Time Constant (103b)

Discoveries:

1. Charging a capacitor causes its voltage to ____crease. Discharging causes its voltage to ____crease.
2. A capacitor current is said to be in the "positive" direction when the capacitor is ____ing. (97)
3. How can a capacitor current be determined from the capacitor's charge vs time graph? (98, 100)
4. How can the amount of electric charge delivered to or from a capacitor plate during any given time interval be determined from the capacitor's current vs. time graph? (98, 99, 100)
5. What does a capacitor's charge vs. voltage graph look like, and how can it be described with an equation? (First capacitor law, p. 100)
6. How can capacitor current be determined from the capacitor's voltage vs. time graph and constants? (Second capacitor law, p. 100)
7. How can you calculate the amount of energy stored in a capacitor? (101)
 - a. -from Q and V:
 - b. -from Q and C:
 - c. -from V and C:
8. How can the capacitance of a combination be predicted? (101)
 - a. Series combination of capacitors:
 - b. Parallel combination of capacitors:
9. What is the only non-trivial function in mathematics which is identical to its own derivative? (103b)
10. If a variable always changes by a fixed percentage or fraction during a standard time interval, the graph of that variable vs. time must be a member of what family of functions? (102, 102b)
11. When a capacitor is charged or discharged through a resistor, what is the shape of the voltage vs time graph? (98, 99, 102,103)
12. Half-life formula: (103, 103c)
13. Suppose we know the initial value and initial rate of an exponential decay process: How can we use those quantities to predict the half-life? (#3b on page 103)
14. Suppose we know the derivative of $f(x)$:
If "k" represents a constant, how can we determine the derivative of $f(kx)$? (RS VIII)
15. If we know the integral of $f(x)$, how can we determine the integral of $f(kx)$? (RS VIII)
16. How are voltages related in a series circuit? (RS IX, 98, 99R)