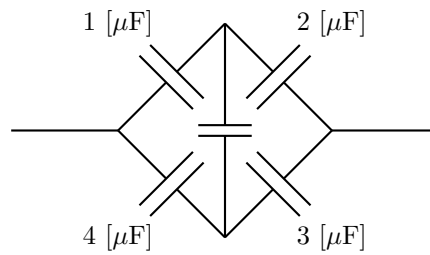


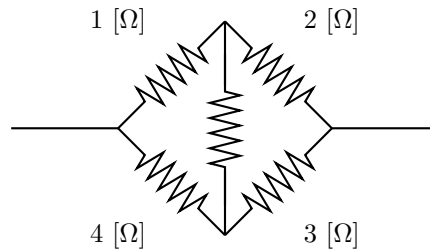
Exercise 1. Kirchhoff's Laws I

Find the equivalent capacitance. The central capacitor has a capacitance of $5 \text{ } [\mu\text{F}]$.



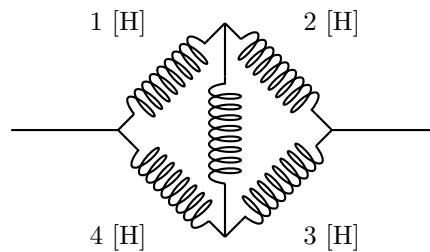
Exercise 2. Kirchhoff's Laws II

Find the equivalent resistance. The central resistor has a resistance of $5 \text{ } [\Omega]$.



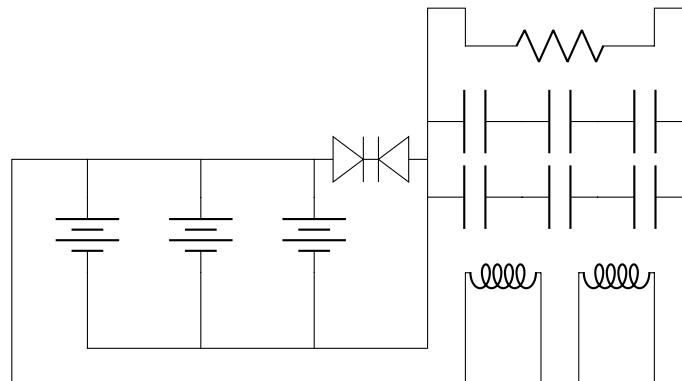
Exercise 3. Kirchhoff's Laws III

Find the equivalent inductance. The central inductor has an inductance of $5 \text{ } [\text{H}]$. Hint: inductance adds like resistance.



Exercise 4. Kerckhoff's Hall

Determine the voltage and current everywhere in this circuit as a function of time:



Exercise 5. Capacitive Circuits I

A circuit composed of a battery, a capacitor, and a light bulb will start bright and get progressively dimmer.

- (a) True *** (b) False

Exercise 6. Capacitive Circuits II

Increasing the capacitance of the capacitor in the circuit above will make the light:

- (a) Dim faster (c) Brighten faster
(b) Dim slower *** (d) Brighten slower

Exercise 7. Inductive Circuits I

A circuit composed of a battery, an inductor, and a light bulb will start bright and get progressively dimmer.

- (a) True (b) False ***

Exercise 8. Inductive Circuits II

Increasing the inductance of the inductor in the circuit above will make the light:

- (a) Dim faster (c) Brighten faster
(b) Dim slower (d) Brighten slower ***

Exercise 9. Real Circuits

No circuit is entirely inductive or capacitive.

- (a) True *** (b) False

Exercise 10. RC Circuit I

Consider a circuit with a 200 [pF] capacitor and a 10 [Ω] resistor, what is the charge on the capacitor one second after a 5 [V] battery is connected?

- (a) 0 [C] (c) 10^{-6} [C]
(b) 10^{-9} [C] *** (d) 1 [C]

Exercise 11. RC Circuit II

Consider a circuit with a 200 [pF] capacitor and a 10 [Ω] resistor, what is the current on the capacitor one second after a 5 [V] battery is connected?

- (a) 0 [A] *** (c) 10^{-6} [A]
(b) 10^{-9} [A] (d) 1 [A]