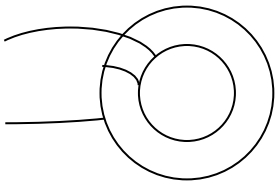
Excercise 3

1. You wrap wire 100 turns around your pencil in order to make a coil. Calculate the inductance of your coil if the length of your coil is 3 cm and the diameter of your pencil is 0.7 cm.

2. There are 50 turns in a coil, which length of which is 2.5 cm and the diameter is 0.5cm. Calculate the quality factor of the coil when the copper wire is used for wrapping and the diameter of the used wire is 0.5 mm.

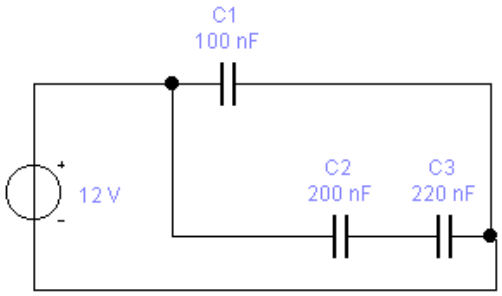
3. There are 500 turns in the circular shape (radius=1.5cm) inductor. The core of the inductor is made by a ferrite based material, the permeability of which is 200. Calculate the inductance of the inductor, when the cross-section diameter of the core is 0.8 cm.



4. Design an inductor, the inductance of which is 10 µH.

5. Capacitors 2n2, 3n3 and 8n2 are connected in the series connection. Calculate the total capacitance. What is the total capacitance if these capacitors are connected in the parallel connection?

6. Calculate the voltage across C_2. What is the charge in the C_1.



7. Calculate the maximum possible charge in the capacitor C.