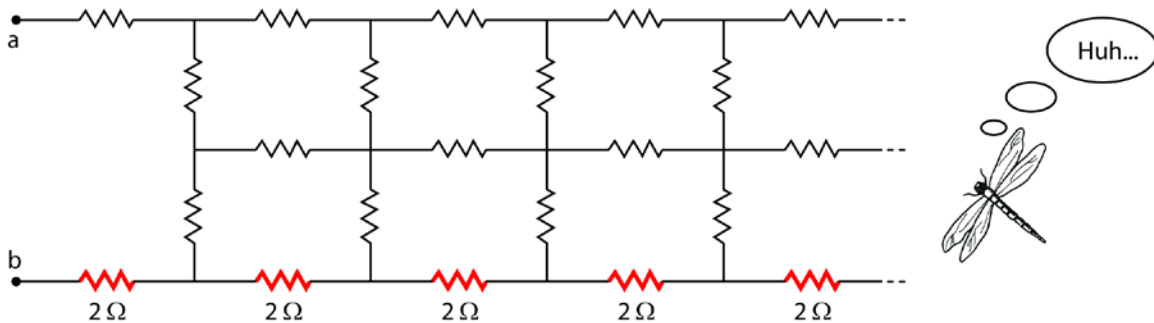


2017 Physics Prize Problem

Infinite Resistor Network



The resistor network shown above terminates at nodes a and b but continues to the right without end. Each resistor is a $1\text{-}\Omega$ resistor, except along the bottom edge where there are $2\text{-}\Omega$ resistors. An ohmmeter measures the resistance between nodes a and b . What is the measured resistance? *

*In the event of multiple correct solutions, the winning answer will be the one with the highest numerical precision.

The Porter Prize and Andreas Prize

The Porter Prize was established by Carroll Porter '32, and the Andreas Prize was established in memory of Edgar L Andreas '69. Combined income from these two endowed prize funds is awarded annually to the student who submits the best solution to a complex physical problem by the use of iterative techniques. Any student at Knox may enter. Solutions should be turned in to Prof. Tom Moses, D116 SMC by 4 p.m. on **May 1**. Your submission should include a description of the method of solution, a documented listing of any computer code you develop for the solution, and any relevant computer printouts or plots.