Example 5.2

We have available two centrifuges for the sedimentation of *Chlorella* cells in a pond. The cells have a v_g of 1.07×10^{-4} cm/s.

a) What is the volumetric capacity of each centrifuge?

Centrifuge 1
Disk Centrifuge with 80 discs at an angle of 40°
Outer radius = 15.7 cm
Inner radius = 6.0 cm
Operates at 6000 rev/min

Centrifuge 2
Tubular bowl centrifuge
Length = 143 cm
Bowl diameter = 32 cm
Opening = 8 cm
Operates at 10000 rev/min

b) We decide to use centrifuge 1 at a speed to obtain the flowrate found for centrifuge 2. What speed will be used?