

Extra Problem 5A

A lab centrifuge with an inner radius of 9 cm and a bottle tip radius of 20 cm has been used by scientists to separate yeast cells from broth. They can just obtain a clean separation by operating the centrifuge at 8,000 rpm for 30 minutes.

- a) Find the value of v_g .
- b) You are part of a team to scale up the process to 7,500 liters, and have available a tubular bowl centrifuge with a length of 190 cm, a bowl diameter of 40 cm and a bowl opening of 8 cm. If it operates at 12,000 rpm, how long will it take for this centrifuge to accomplish the larger scale centrifugation?