**Chemical Engineering 374**

**Reading Questions 22—Chapter 14.3**

**Name** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Within a similar family of pumps, neglecting the effect of the Reynolds number and of roughness, on what single dimensionless group can we expect the head coefficient, power coefficient, and efficiency to depend?
2. For the pump in Example 14-9, what type of pump would have been indicated if the required flow rate was nine times as large as that given in the example?
3. In Example 14-11, the performance characteristics of a water pump already being manufactured were presented and converted to dimensionless form, and the BEP was identified. Scaling laws were used to design a geometrically similar pump to use with a different fluid. What characteristic of the new pump was determined? What practical consideration will likely prevent the use of that exact value in a pump? (See the discussion in the example).