MET330 Homework 3.3

13.12 For a centrifugal pump, if the speed of rotation of the impeller is cut in half, the capacity is also cut in half

$$\frac{Q_1}{Q_2} = \frac{N_1}{N_2} \quad \text{if } N_2 = N_1/2, \text{ then } Q_2 = Q_1/2$$

13.14 for a given centrifugal pump casing, if the diameter of the impeller is reduced by 25%, the capacity changes also decreases by 25%

$$\frac{Q_1}{Q_2} = \frac{D_1}{D_2} \quad \text{if } D_2 = 0.75(D_1) \quad \text{then } Q_2 = 0.75(Q_1)$$

13.34 A. 500 gal/min, with 80 ft total head
↳ from chart, reciprocating pump

B. 500 gal/min, with 800 ft of head
↳ from chart, reciprocating pump

C. 500 gal/min, with 80 ft of a viscous adhesive head
↳ from chart, rotary pump

D. 80 gal/min, with 8000 ft of head
↳ from chart, multi-stage centrifugal