

CHBE 344 Homework Assignment #1

Answers to problems

Problem 1:

- a) Spheres: 4 points
Cylinders: 4 points
- b) Explanation: 2 points

Problem 2a:

- i. Mean: 58.906, STD: 472.808, Skewness: 20.766, Kurtosis: 510.809, Plot: 2 points
- ii. Mean: 0.305, STD: 0.15667, Skewness: 1.37107, Kurtosis: 5.8219, Plot: 2 points
- iii. Mean: 0.57105, STD: 0.312075, Skewness: 2.21, Kurtosis: 13.55990, Plot: 2 points
- iv. Mean: 0.26498, STD: 0.2211, Skewness: 1.1776, Kurtosis: 3.7668, Plot: 2 points

Problem 2b:

- i. Diameter = **0.2808409 mm** (2 points)
- ii. $D[4,3] = \mathbf{0.575848\text{ mm}}$ (2 points)
- iii. $D50 = \mathbf{0.0949516\text{ mm}}$ (2 points)
- iv. $D10 = \mathbf{0.14084\text{ mm}}$ (2 points); $D90 = \mathbf{0.5061374\text{ mm}}$ (2 points)

Problem 3:

- a) $E = \mathbf{30.81\text{ kW/(kg/s)}}$ (4 points)
- b) $E = \mathbf{20.689\text{ kW/(kg/s)}}$ (4 points)
- c) Explanation: 2 points

Problem 4:

- d) Plot: 4 points
- e) Percent removed = **81%** (4 points)
- f) Explanation: 2 points