

Section 6.3 — Parts of Exercise 6.25

Problem: An experimenter publishing in the *Annals of Botany* investigated whether the stem diameter of the dicot sunflower would change depending on whether the plant was left to sway freely in the wind or was artificially supported¹. Suppose that the unsupported stem diameters at the base of a particular species of sunflower plant have a normal distribution with an average diameter of 35 mm and a standard deviation of 3 mm.

1. What is the probability that a sunflower plant will have a basal diameter of more than 40 mm?
2. If two sunflower plants are randomly selected, what is the probability that both plants will have a basal diameter of more than 40 mm?
3. Within what limits would you expect the basal diameters to lie, with probability .95?

¹Adapted from A.M. Goodman and A.R. Ennos, "The Response of Field-Grown Sunflower and Maize to Mechanical Support," *Annals of Botany* 79 (1997):703.