Math 530

Autumn 2006

Solution to 3.3.19

Let X_i be the weight of person i and $S = X_1 + \cdots + X_{30}$. Then

$$E(S) = 30E(X_1) = 30(150) = 4500$$

and

$$SD(S) = \sqrt{30}SD(X_1) = \sqrt{30}(55) = 301.2474$$

Thus

$$P(X > 5000) = 1 - P(X \leq 5000) \approx 1 - \Phi\left(\frac{5000 - 4500}{301.2474}\right) = 1 - \Phi(1.66) = 1 - 0.9525 = \mathbf{0.0485}$$