Finite population correction factor

Exercise 03 Suppose we draw a sample of size n from a finite population of size N $(2 \leq n < N)$, where sampling is without replacement. Then find the finite population correction factor

$$FPC = \sqrt{\frac{N - n}{N - 1}}$$

in each the following cases.

(1) $N = 50,\ n = 10$

(2) $N = 100,\ n = 50$

(3) $N = 500,\ n = 200$

(4) $N = 1{,}000,\ n = 30$

Answer:

(1) $FPC = \sqrt{\dfrac{50 - 10}{50 - 1}} \fallingdotseq 0.904$

(2) $FPC = \sqrt{\dfrac{100 - 50}{100 - 1}} \fallingdotseq 0.711$

(3) $FPC = \sqrt{\dfrac{500 - 200}{500 - 1}} \fallingdotseq 0.775$

(4) $FPC = \sqrt{\dfrac{1{,}000 - 30}{1{,}000 - 1}} \fallingdotseq 0.985$