Q: The probability that a person is not a swimmer is 0.3. The probability that out of 5 persons 4 are swimmers is

Solution:

Parameter	Values	Description
n	5	Number of draws
p	0.3	Probability that person is not a swimmer
q	0.7	Probability that person is a swimmer

Using the gaussian approximation method:

$$\mu = np \tag{1}$$
$$= 3.5 \tag{2}$$
$$\sigma = \sqrt{npq} \tag{3}$$
$$= 1.024 \tag{4}$$

Here, probability that out of 5 persons 4 are swimmers is

$$\Pr(X = 4) = \Pr(3.5 < X < 4.5) \tag{5}$$
$$= \int_0^{0.976} \frac{1}{\sqrt{2\pi}} \times e^{-\frac{x^2}{2}} dx \tag{6}$$
$$\tag{7}$$
$$= 0.335 \tag{8}$$

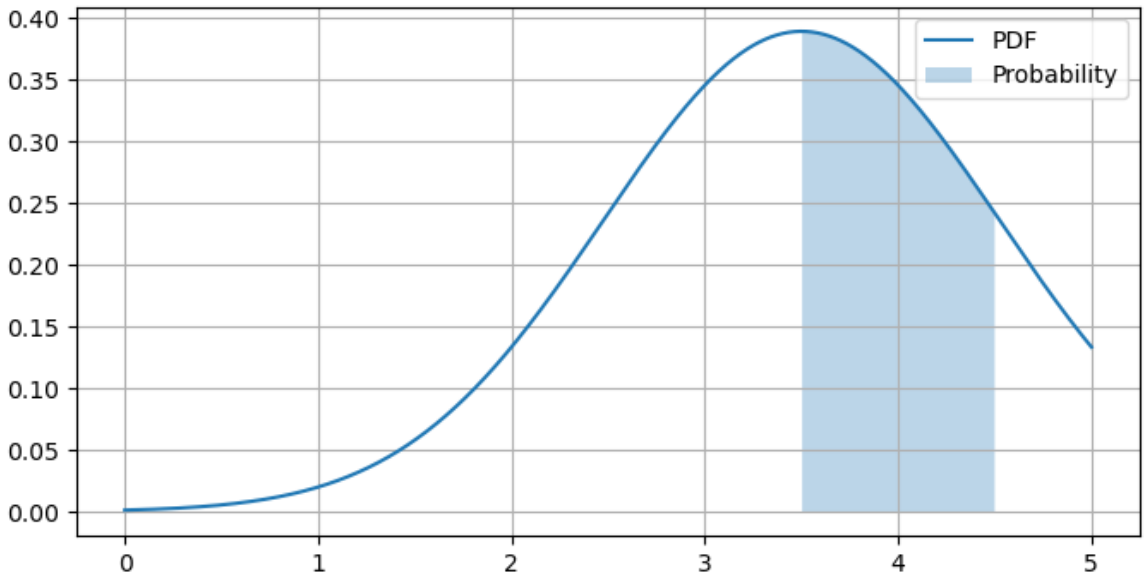

Fig. 0. PDF for 4 out of 5 Persons Being Swimmers (Gaussian Approximation)