

Session 3: Probability Distributions II

Exercises

For questions 1 and 2, recall that, for offspring genotypes from a heterozygous cross:

Carrier = Aa with $\Pr(Aa) = \frac{1}{2}$

Unaffected = AA with $\Pr(AA) = \frac{1}{4}$

Affected = aa with $\Pr(aa) = \frac{1}{4}$

Consider a scenario with $n=3$ offspring.

Question 1

What is the probability that all three offspring will be carriers?

Question 2

What is the probability that two offspring will be affected and one will be a carrier?

Exercises

For questions 3 -5, calculate the specified probabilities for the standard Normal random variable $Z \sim N(0,1)$. You can use an online standard Normal CDF calculator.

Question 3

$$P(Z \leq 1.65) =$$

Question 4

$$P(Z \geq 0.5) =$$

Question 5

$$P(-1.96 \leq Z \leq 1.96) =$$