Problem

EE22BTECH11010 - Aryan Bubna

question: Fabry disease in humans is a X-linked disease.The probability(in percentage) for a phenotypically normal father and a carrier mother to have a son with fabry disease is

Solution: before going into question let me clear out few things on chromosome distribution in general

parent	chromosome
father	XY
mother	XX

TABLE 0: without disease

now chromosome distribution when fabry disease is effected and there is a normal father and carrier mother

parent	chromosome
father	XY
mother	X$\bar{X}$

TABLE 0: with disease

as given in the question a son is to be born with fabry disease

offspring	chromosome	
son	with fabry disease	$\bar{X}Y$
	without fabry disease	XY

TABLE 0: chromosome of son

let us denote a random variable Z as the event that the son is born with fabry disease.

$\Pr(Z) = \frac{1}{2}$

hence the percentage of the probability is 50%