

Some questions

① A number k is picked at random between 1 and 100 (inclusive). What is the probability that k is even? Divisible by 3? What is the (conditional) probability that it is prime, given that it is even? What is the probability that it is not divisible by 3, given that it is even?

② A ~~number~~ point (x, y) is chosen at random from the unit square, $[0, 1] \times [0, 1]$.

What is the probability that it satisfies $y \geq x$, given that $y \geq x^2$? What is the

conditional probability that $y \geq x^2$, given

that $x = \frac{3}{4}$? ... given that

$\frac{3}{4} \leq x < \frac{3}{4} + \epsilon$ (where ϵ is some

number ~~between~~ satisfying $0 < \epsilon \leq \frac{1}{4}$)?