Probability mass and probability density

- Explain the meaning of the term probability mass function.

- Suppose that we use the random variable X to denote the outcome of a toss of a fair coin and that we say that if the coin comes up heads we have $X = 0$ and if the coin comes up tails we have $X = 1$. What is the probability mass function for this random variable.

- Now suppose that the random variable X is used to denote the outcome from a roll of a fair die. Write out an expression for the probability mass function for this random variable. Now draw the probability distribution function for this random variable and write out a mathematical expression for this function. As you do this remember that the probability distribution function must have a value for every number on the real axis.

- Explain the meaning of the term probability density function?

- Do the random variables for the coin and the die have a probability density function. Explain your reasoning giving as much detail as you can.

- Explain what we mean when we state that discrete and continuous random variables are normalised.

- In the final parts of the video I introduce the uniform random variable. Given the shape of the curves on these slides what are the probability density and the probability distribution function for this random variable?