By the end of this week, you should be able to:

• distinguish between discrete and continuous random variables (CRV)

• understand probability density functions and cumulative distributions for continuous random variables

• compute the central tendency and variability (spread) of continuous distributions

• understand the assumptions on which the normal model is based

• understand the probability limits of *almost certainly* and *very probably*,

 that is, the three and two sigma limits

**Week**

**Term**

**2020**

9-11

4

**SMM4**

**Continuous Random Variables**

Goals



Theoretical Components

Practical Components

Maths Quest 12 Mathematical Methods, Chapter 12

**Continuous Random Variables**

Exercises 12A to 12D

**Normal Distribution**

Exercise 12E to 12G

Do as many as you can.

Resources:

* Mathspace.co
* Maths Quest 12 Mathematical Methods, Chapter 12
* Week 9-11 handout on google classroom



Video Lecture:

<https://drive.google.com/file/d/10Dg5uwChqL7aHpOmoDkyTWJW-bCeoNEB/view>

<https://drive.google.com/file/d/1EOmdhj5X-lme4XoXLdAn4oXOv99JlYWm/view>

<https://drive.google.com/file/d/1EMKO1vgDuhLsPVJYKBUNtPw-qhZC5CEO/view>

<https://drive.google.com/file/d/1HC_JPK9fEMSVKJCetp3UOy_uFf9fLN_6/view>

Investigation

**Week 9 – review and get ready for your exam**

**Week 11 – see next page**

**Quiz on mathspace**

QFO

Quiz/Forum/Other

**Question 1.**

A random variable, *X*, has its frequency curve defined as:



a Draw the graph of *f*(*x*).

b Show that *f*(*x*) is a probability density function.

c Find the probability, correct to 4 decimal places, that *X* is:

i smaller than 3

ii greater than 2.5

iii greater than 2.5, given that it is smaller than 3.

**Question 2.**

The wingspan of birds of a particular species has normal distribution with mean 50 cm and standard deviation 5 cm.

a) Find the probability that a randomly selected bird has a wingspan greater than 60 cm.

b) If the wingspan is measured to the nearest cm, find the probability that a randomly selected bird has a wingspan measured as 50 cm.