

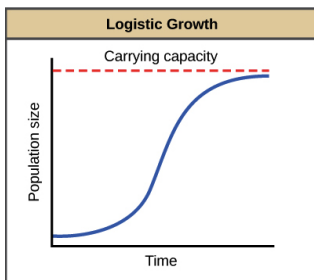
Goals

By the end of this unit, students:

- understand the concepts and techniques in applications of calculus and statistical inference
- apply reasoning skills and solve problems in applications of calculus and statistical inference
- communicate their arguments and strategies when solving problems
- construct proofs of results
- interpret mathematical and statistical information and ascertain the reasonableness of their solutions to problems.

This week:

- solve simple first-order differential equations of the form $\frac{dy}{dx} = f(x)$, differential equations of the form $\frac{dy}{dx} = g(y)$ and, in general, differential equations of the form $\frac{dy}{dx} = f(x)g(y)$ using separation of variables
- examine slope (direction or gradient) fields of a first order differential equation
- formulate differential equations including the logistic equation that will arise in, for example, chemistry, biology and economics, in situations where rates are involved.



Source: <https://goo.gl/KMmFbC>

Theoretical Components

Read the notes and study the examples.
(Classroom/ABOUT/Resources/S2/Term3/WK09_10)

Further notes/examples:

- <https://goo.gl/wuFhr>
- <https://goo.gl/y7omc7>
- <https://goo.gl/CghUJy>
- <https://goo.gl/TjH23H>

Video Examples:

- <https://goo.gl/3jYLqu>
- <https://goo.gl/Ot5itd>
- <https://goo.gl/tYWHU4>
- <https://goo.gl/T7OMZ4>

Khan's Academy: <https://goo.gl/4T2vps>

Practical Components

Exercises: available in Google
Classroom/ABOUT/Resources/S2/Term3/WK09_10

Investigation

The rate of hair loss of a man is proportional to how older than 30 he is. If Toby is born with 20000 hairs and has 200000 hairs at the age of 30, when will he be bald?



20 marks.

QFO

Quiz/Forum/Other

Keep checking G/Classroom for more resources.