Composite Functions

Examples

1. Let , and . Find

Solve

1. The functions and are defined by

a) Find b) Solve

Test your understanding

1. The functions and and are defined by
2. Find
3. Solve the equation
4. The functions and are defined by
5. Find , giving your answer in its simplest form.

Extension

[MAT 2014 1F]

The functions and are defined for real numbers by and .

The function is applied times and the function is applied times, in some order, to produce the function

It is possible to deduce that:

1. and
2. is odd and is even.
3. is even and is odd.
4. and are powers of 2.
5. none of the above.

Ex 2C Pg 34

[MAT 2012 Q2]

Let and .

i) Show that

ii) Note that

Find all the other ways of combining and that result in the function .

iii) Let be integers. Determine the function

iv) Let be an integer. How many different ways of combining the functions and are there that result in the function ?