Mathematics Department – Langholm Academy

HIGHER HOMEWORK UNIT 1

CHAPTER 2.1

Compound & Inverse Functions
Homework 2

Higher - Unit 1
Compound & Inverse Functions - Homework 2

1. Evaluate the following where $f(x) = 3x - 2$ and $g(x) = 2x + 3$

   a. $f(g(x))$
   b. $g(f(x))$
   c. $f(f(x))$
   d. $g(g(x))$

2. Evaluate $f(g(x))$ and $g(f(x))$ where $f(x) = 2 - x$ and $g(x) = \frac{1}{x}$

3. Evaluate $f(g(x))$ and $g(f(x))$ where $f(x) = 3x - 1$ and $g(x) = \frac{1}{x+1}$

4. Functions $f(x) = \frac{1}{x-4}$ and $g(x) = 2x + 3$

   a. Find an expression for $h(x)$ where $h(x) = f(g(x))$
   b. Write down any restrictions on the domain of $h(x)$

5. Function $f(x) = \frac{3}{x+1}$

   a. Find an expression for $h(x)$ where $h(x) = f(f(x))$ giving your answer as a fraction in its simplest form
   b. Write down any restrictions on the domain of $h(x)$

6. Functions $f(x) = \frac{1}{\sqrt{x+1}}$ and $g(x) = 2x - 5$

   a. Find an expression for $h(x)$ where $h(x) = f(g(x))$
   b. Write down any restrictions on the domain of $h(x)$

7. Functions $f(x) = \frac{1}{\sqrt{x+1}}$ and $g(x) = x^2 - 26$

   a. Find an expression for $h(x)$ where $h(x) = f(g(x))$
   b. Write down any restrictions on the domain of $h(x)$