Name: _____

ASM Tuition Academy

Compound and Inverse Functions

Instructions:

- Use **black** ink or ball-point pen.
- Answer all questions.
- Answer the questions in the spaces provided
  - there may be more space than you need.
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- You must **show all you're working out.**

Information:

- The marks for each question are shown in brackets
  - use this as a guide as to how much time to spend on each question.

Advice:

- Read each question carefully before you start to answer it.
- Keep an eye on time.
- Try to answer every question.
- Check your answers if you have time at the end.

Q1- Given that f(x) = x - 5, find:

(a) f(6)

.....

(1)

(b) f(4)

……

(1)

(Total For Question 1 is 2 marks)

Q2- Given that $g(x) = 2x^2 - 12$, find:

(a) g(3)

……

(1)

(b) g(-3)

……

(1)

(c) Solve: g(x) = 6

……

(3)

(Total For Question 2 is 5 marks)

Q3- Given that f(x) = 4x - 6, find:

(a) f(2)

……

(1)

(b) f(-2)

……

(1)

(c) Solve f(x) = 2

……

(2)

(Total For Question 3 is 4 marks)

Q4- Given that $f(x) = x^2 - 4$, find:

(a) f(8)

……

(1)

(b) f(-1)

……

(1)

(c) Find: $f^{-1}(x) = 10$

……

(2)

(Total For Question 4 is 4 marks)

Q5- Given that f(x) = 2x - 6 and g(x) = 3x + 6:

(a) Find gf(4)

……

(2)

(b) Work out an expression for $f^{-1}(x)$

……

(2)

(c) Solve f(x) = g(x)

……

(2)

(Total For Question 5 is 6 marks)

Q6- Given that f(x) = 6x + 1 and $g(x) = x^2$

(a) Find fg(x)

……

(2)

(b) Work out an expression for gf(x)

……

(2)

(c) Solve fg(x) = gf(x)

……

(3)

(Total For Question 6 is 7 marks)

Q7- Given that $f(x) = x^2 + 2$ and $g(x) = x + 4$:

(a) Work out an expression for $g^{-1}(x)$

……

(2)

(b) Work out an expression for $f^{-1}(x)$

……

(2)

(c) Solve $f^{-1}(x) = g^{-1}(x)$

……

(4)

(Total For Question 7 is 8 marks)

Q8- The function f is defined such that

$f(x) = x^2 - 16$

(a) Find an expression for f(x-3)

……

(2)

(b) Hence solve: f(x-3) = 0

……

(2)

(Total For Question 8 is 4 marks)

Q9- The function f is defined such that

f(x) = 4x - 2

(a) Find $f^{-1}(x)$

……

(2)

(b) The function g is defined such that

$g(x) = mx^2$ where m is a constant

Given that fg(2) = 14 Work out the value of m.

……

(2)

(Total For Question 9 is 4 marks)