

SEKOLAH BUKIT SION – HIGH SCHOOL

AY 2020-2021

MATHEMATICS (EXTENDED) 0580

CHAPTER TEST

FUNCTIONS: COMPOSITE AND INVERSE

NAME: _____ CLASS: _____ DATE: _____

INSTRUCTIONS:

1. Use any of the 3 methods to answer the questions in an orderly and neat manner.
 - using a file paper
 - printed test paper
 - annotate the pdf file
2. Use **black** or **blue** pen.
Do not use highlighter or correction tape.
3. Once you are done, insert the **pdf printout** on the assigned page for this Chapter Test.
Do not “Add work” as it becomes a different file.
Your work should be found inside/within the Chapter Test page that was sent.
4. Keep a copy of your work in your personal channel and use

YourNameClass_CompositeInverseTest as the filename.
Example: Emman10.4_CompositeInverseTest
5. Submit on-time. You only are given an extra 10 minutes after the specified time duration to scan and attach your files.

After the closing time has elapsed, your work will NO LONGER be accepted.

QUESTION 01Given each composite function $fg(x)$, provide the missing $f(x)$ or $g(x)$.

[6]

	$f(g(x))$	$f(x)$	$g(x)$
(a)	$(3x - 4)^3$	x^3	
(b)	$\frac{1}{x^2 - 1}$		x^2
(c)	x	$-2x$	
(d)	$x^2 - 3x + 2$		$x - 1$
(e)	$\sqrt{x^3 - 1}$	\sqrt{x}	

QUESTION 02The functions f and g are defined by:

$$f : x \rightarrow 3x + 2 \quad x \in \mathbb{R}$$

$$g : x \rightarrow \frac{6}{2x+3} \quad x \in \mathbb{R}, x \neq -1.5$$

(a) Find the value of x for which $fg(x) = 3$.

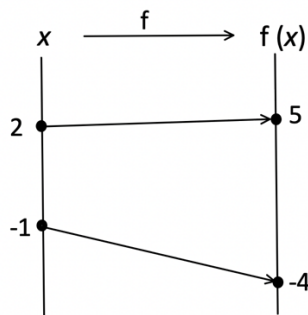
[3]

(b) Find an expression for $f^{-1}(x)$ and $g^{-1}(x)$.Solve the equation $f^{-1}(x) = g^{-1}(x)$.

[5]

QUESTION 03

The figure shows part of the mapping $f: x \rightarrow px + q, x \in \mathbb{R}$.



Find

- (a) the value of p and q . [3]
- (b) the image of 3 under f . [1]
- (c) the element whose image is 8. [1]

QUESTION 04

Functions f and g are defined by:

$$f: x \rightarrow 4x - 3$$

$$g: x \rightarrow 2 - 3x^2$$

$$h: x \rightarrow \frac{1}{x}$$

- (a) Find in simplest expanded form:
 - (i) f^2 [2]
 - (ii) gh [2]
 - (ii) $fg(-1)$ [2]
 - (iii) gf [2]
- (b) For what value of x is hf is undefined? [2]
- (c) Which is TRUE, $(fg)^{-1}(x) = f^{-1}g^{-1}(x)$ **OR** $(fg)^{-1}(x) = g^{-1}f^{-1}(x)$? [5]
Show the complete TRUE proof.

QUESTION 05

Given the function $f(x) = \frac{2x+1}{x+2}$, where $x \neq -2$.

- (a) Find the inverse of f , $f^{-1}(x)$. [3]
- (b) Solve for x if $f^{-1}(x) = f(x)$. [3]