



SEKOLAH BUKIT SION
AY 2021-2022
MATHEMATICS 0580

CHAPTER TEST: FUNCTIONS (PART 2)

NAME: _____ CLASS: _____ DATE: _____

Problem 01

[14 marks]

Given that $f(x) = x^2 + 6$ and $g(x) = \sqrt{x + 3} - 2$

Find

- | | |
|-------------|------------------|
| (a) $f(-2)$ | (e) $g(13)$ |
| (b) $ff(0)$ | (f) $g^2(-3)$ |
| (c) $gf(4)$ | (g) $gf^{-1}(1)$ |
| (d) $fg(6)$ | (h) $fg^{-1}(4)$ |

Problem 02

[8 marks]

Given the following functions:

$f(x) = 3x - 1$	$g(x) = x^2$	$h(x) = \frac{1}{2}x$	$k(x) = \frac{2x}{x+1}$
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determine the composition of the following functions. Please observe proper use of mathematical notations and symbols.

$\frac{x^2}{4}$	
$\frac{4x}{x+1}$	
$9x - 4$	
$\sqrt{\frac{2x}{x+1}}$	

Problem 03**[6 marks]**

(a) Given that $fg(x) = \frac{x+3}{x-1}$ and $g(x) = x - 4$, find an expression for the $f(x)$.

(b) Given that $g(x) = \frac{5x-2}{3x-5}$, find an expression for $g^{-1}(x)$, the inverse of $g(x)$.

Problem 04**[5 marks]**

Given that $f(x) = 3x - 2$ and $g(x) = x^2 + 1$.

(a) Show that $gf(x) = 9x^2 - 12x + 5$.

(b) Given that $fg(x) = gf(x)$, show that $3x^2 - 6x + 2 = 0$.

(c) Solve for x in $3x^2 - 6x + 2 = 0$, expressing your answer correct to 3 sf.

Problem 05**[4 marks]**

Given that $f(x) = x^2 - 9$ and $g(x) = 3x + 2$.
Solve the equation $gf(x) = g^{-1}(8)$.