

Math 151 - Quiz 4

March 2, 2016

Name key

Score _____

Show all work to receive full credit. Supply explanations when necessary.

1. (6 points) Let $f(x) = x^2 + 2x$ and $g(x) = x - 6$.

(a) Evaluate $(f + g)(3)$. = $f(3) + g(3)$
= $(3)^2 + 2(3) + 3 - 6 = \boxed{12}$

(b) Evaluate $(fg)(2)$. = $f(2)g(2) = [(2)^2 + 2(2)][2 - 6]$
= $8(-4) = \boxed{-32}$

(c) Find and simplify the formula for $(f \circ g)(x)$. = $f(g(x)) = (x - 6)^2 + 2(x - 6)$
= $x^2 - 12x + 36 + 2x - 12$
= $x^2 - 10x + 24$

2. (2 points) Some values of the functions f and g are given in the table below. Evaluate $(g - f)(2)$ and $(f \circ g)(3)$.

$g(2) - f(2)$
= $2 - 4 = \boxed{-2}$

x	0	1	2	3	4
$f(x)$	8	2	4	-7	6
$g(x)$	-9	0	2	4	5

$(f \circ g)(3) = f(g(3))$
= $f(4) = \boxed{6}$

3. (2 points) Find functions f and g so that $(f \circ g)(x) = (x^2 + 5)^4$.

$g(x) = x^2 + 5$
 $f(x) = x^4$