

Name: \_\_\_\_\_

## Composition of Three Functions

L1S1

A) If  $f(x) = 5x^2 + 6$ ,  $g(x) = 3x$  and  $h(x) = x - 2$ , find the following.

1)  $f(g(h(x)))$

2)  $g(h(f(x)))$

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B) If  $f(x) = x - 10$ ,  $g(x) = x^2 - 1$  and  $h(x) = -9$ , find the following.

1)  $(h \circ g \circ f)(x)$

2)  $(g \circ f \circ f)(x)$

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C) If  $f(x) = 2x + 3$ ,  $g(x) = x - 7$  and  $h(x) = 5 - x$ , find the following.

1)  $(h \circ (f \circ g))(x)$

2)  $((h \circ f) \circ g)(x)$

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3) Is  $(h \circ (f \circ g))(x) = ((h \circ f) \circ g)(x)$ ?

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D) 1) If  $f(x) = x + 1$ ,  $g(x) = x^2 - 7$  and  $h(x) = 5$ , which of the following represents  $f(g(h(x)))$ ?

i)  $x^2 + 2x - 6$

ii) 19

iii)  $x^2 - 6$

iv) -19

2) If  $f(x) = 2x^2$ ,  $g(x) = x^2 - 8$  and  $h(x) = -4x$ , which of the following represents  $(g \circ h \circ f)(x)$ ?

i)  $64x^4 + 8$

ii)  $4x^4 - 15$

iii)  $64x^4 - 8$

iv)  $4x^4 + 15$

## Composition of Three Functions

A) If  $f(x) = 5x^2 + 6$ ,  $g(x) = 3x$  and  $h(x) = x - 2$ , find the following.

1)  $f(g(h(x)))$

2)  $g(h(f(x)))$

$45x^2 - 180x + 186$

$15x^2 + 12$

B) If  $f(x) = x - 10$ ,  $g(x) = x^2 - 1$  and  $h(x) = -9$ , find the following.

1)  $(h \circ g \circ f)(x)$

2)  $(g \circ f \circ f)(x)$

$-9$

$x^2 - 40x + 399$

C) If  $f(x) = 2x + 3$ ,  $g(x) = x - 7$  and  $h(x) = 5 - x$ , find the following.

1)  $(h \circ (f \circ g))(x)$

2)  $((h \circ f) \circ g)(x)$

$-2x + 16$

$-2x + 16$

3) Is  $(h \circ (f \circ g))(x) = ((h \circ f) \circ g)(x)$ ?

True

D) 1) If  $f(x) = x + 1$ ,  $g(x) = x^2 - 7$  and  $h(x) = 5$ , which of the following represents  $f(g(h(x)))$ ?

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2) If  $f(x) = 2x^2$ ,  $g(x) = x^2 - 8$  and  $h(x) = -4x$ , which of the following represents  $(g \circ h \circ f)(x)$ ?

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