

## Composition of Three Functions

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

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

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

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B) If  $f(x) = 5x - 1$ ,  $g(x) = 6x$  and  $h(x) = 3 - x$ , find the following.

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

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

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C) If  $f(x) = x + 8$ ,  $g(x) = 4x$

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

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

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D) 1) If  $g(x) = 4x - 3$  and  $h(x) = 1 - x$ , which of the following represents  $h(h(g(x)))$ ?

i)  $4x + 3$

ii)  $2x^2 + 4x - 10$

iii)  $3x - 7x^2$

iv)  $4x - 3$

2) If  $f(x) = 3x + 8$  and  $g(x) = -6$ ,  $h(x) = -2x^2$ , which of the following represents  $(f \circ h \circ g)(x)$ ?

i)  $2x^2 - 85$

ii)  $-208$

iii)  $3x + 92$

iv)  $208$

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## Composition of Three Functions

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

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

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

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 $2x^4 - 12x^2 + 24$

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 $4x^4 + 24x^2 + 33$

B) If  $f(x) = 5x - 1$ ,  $g(x) = 6x$  and  $h(x) = 3 - x$ , find the following.

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

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 $-30x + 1$

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 $x + 9$

C) If  $f(x) = x + 8$ ,  $g(x) = 4x - 3$  and  $h(x) = 2x + 1$ , find the following.

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

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 $323$

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 $23$

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

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 $\text{True}$

D) 1) If  $g(x) = 4x - 3$  and  $h(x) = 1 - x$ , which of the following represents  $h(h(g(x)))$ ?

i)  $4x + 3$

ii)  $2x^2 + 4x - 10$

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2) If  $f(x) = 3x + 8$  and  $g(x) = -6$ ,  $h(x) = -2x^2$ , which of the following represents  $(f \circ h \circ g)(x)$ ?

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