

**Composition of Three Functions**

A) If  $f(x) = 4^x$ ,  $g(x) = \log_4 4x$  and  $h(x) = x^2 + 1$ , find the following.

1)  $h(f(g(a)))$

2)  $f\left(g\left(h\left(\frac{t}{2}\right)\right)\right)$

B) If  $f(x) = -2$ ,  $g(x) = 3x + 5$  and  $h(x) = x^4 - 5x^2 + 1$ , find the following.

1)  $(h \circ g \circ f)(c + 4)$

C) If  $f(x) = \sqrt[3]{8x}$ ,  $g(x) = x$

1)  $(f \circ (h \circ g))(-2w)$

3) Is  $(f \circ (h \circ g))(-2w)$

D) 1) If  $f(x) = \frac{7}{x}$ ,  $g(x) = -5x$  and  $h(x) = x - 9$ , which of the following represents  $g(f(h(9 - 7p)))$ ?

i)  $-5p$

ii)  $-\frac{5}{p}$

iii)  $5p$

iv)  $\frac{5}{p}$

2) If  $f(x) = 3 \log_3 x$ ,  $g(x) = 9^x$  and  $h(x) = 3$ , which of the following represents  $(f \circ g \circ h)(n)$ ?

i) 9

ii) -18

iii) 18

iv) 3

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