

## Evaluating Composition of Three Functions

A) If  $f(x) = 9^{2x}$ ,  $g(x) = 7x - 8$  and  $h(x) = 3x$ , evaluate the following.

1)  $g\left(h\left(f\left(\frac{1}{4}\right)\right)\right)$

2)  $h\left(g\left(f\left(-\frac{1}{2}\right)\right)\right)$

B) If  $f(x) = 4x^2 - 3$ ,  $g(x) = -3$  and  $h(x) = x - 15$ , evaluate the following.

1)  $(f \circ g \circ f)\left(-\frac{3}{7}\right)$

C) If  $f(x) = x^2 - x - 1$ ,  $g(x) = 2x - 1$  and  $h(x) = x + 5$ , evaluate the following.

1)  $(h \circ (g \circ f))\left(-\frac{1}{3}\right)$

3) Is  $(h \circ (g \circ f))\left(-\frac{1}{3}\right)$  a prime number?

D) 1) If  $f(x) = 3x - 4$ ,  $g(x) = 2x - 1$  and  $h(x) = \sqrt{x} + 5$ , which of the following represents  $g\left(f\left(h\left(\frac{2}{3}\right)\right)\right)$ ?

i) 87

ii) -107

iii) -87

iv) 107

2) If  $f(x) = 6 \log_e x$ ,  $g(x) = e^{8x}$  and  $h(x) = \frac{8}{x}$ , which of the following represents  $(h \circ f \circ g)\left(\frac{1}{2}\right)$ ?

i)  $\frac{1}{3}$

ii)  $-\frac{1}{3}$

iii)  $\frac{2}{3}$

iv)  $-\frac{2}{3}$

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