

## Composition of Functions – $f(g(x))$

Combining two formulas into one using substitution

Algorithm

1. Write the rule for  $f(x)$
2. Everywhere you see an  $x$ , substitute  $g(x)$
3. Using 2, substitute the rule for  $g(x)$  everywhere you see  $g(x)$  in the rule
4. Simplify

Use  $f(x) = 3x - 5$      $g(x) = x^2 - 1$      $h(x) = x + 3$

Find the composition of the following functions

1.  $f(g(x))$

2.  $g(f(x))$

3.  $f(h(x))$

4.  $h(f(x))$

5.  $g(h(x))$

6.  $h(g(x))$

7.  $f(h(g(x)))$