Composite Functions

1. If f(x) = 2x + 1 and g(x) = x^2, find

   (a) f(g(x)) (b) g(f(x)) (c) f(f(x)) (d) g(g(x))

2. Given h(x) = 1 - x and g(x) = $\sqrt{x}$, find

   (a) g(16) (b) h(g(16)) (c) g(h(x)) (d) h(g(x))

3. f(x) = $\frac{2}{3x} - 1$ and g(x) = $\frac{2}{3x+3}$.

   (a) Calculate f(g(x)).
   (b) What is the connection between f(x) and g(x)?

4. f(x) = $\sqrt{\frac{x+1}{2}}$ and g(x) = $2x^2$ - 1.

   (a) Calculate f(g(x)).
   (b) State the relationship between f(x) and g(x).

5. The function h(x) = f(g(x)).
   (a) Write down h(x) when f(x) = $2x^2$ -16 and g(x) = 2x – 1.
   (b) Write h(x) in fully factorised form.
   (c) For what values of x will the function $\frac{1}{h(x)}$ be undefined?

6. f(x) = 2x – 1 and g(x) = 2x + 1.

   (a) Find a formula for f(g(x)) and g(f(x)).

   (b) Find the least possible value of f(g(x)) x g(f(x)).

7. f(x) = sin x^0 and g(x) = 3x + 2

   (a) Write down an expression for g(f(x)).

   (b) Solve the equation: g(f(x)) = 1 $\{0 \leq x \leq 360\}$.