Composition of Functions

1 Suppose f and g are the functions given by

$$f(x) = 2x + 1 \quad \text{and} \quad g(x) = x^2.$$

(a) Calculate

    (i) $f(-2)$;

    (ii) $g(-\frac{3}{4})$.

(b) Find an expression for $f(g(x))$.

(c) Find an expression for $g(f(x))$.

2 Suppose f and g are the functions given by

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

(a) Calculate

    (i) $f(-\frac{1}{2})$;

    (ii) $g(-\frac{1}{4})$.

(b) Find an expression for $f(g(x))$.

(c) Find an expression for $g(f(x))$.

3 Suppose f and g are the functions given by

$$f(x) = (x + 1)^2 \quad \text{and} \quad g(x) = 2 - x.$$

(a) Find an expression for $f(g(x))$.

(b) Find an expression for $g(f(x))$.

(c) Calculate $f(g(1))$ and $g(f(-2))$.

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