WORKING WITH FUNCTIONS

1 If $f(x) = x^2 + 7$ and $g(x) = 5 - 2x$, then the correct expression for $f(x) + g(x)$ is:

A $x^2 + 2x + 12$ **B** $x^2 - 2x + 12$ **C** $x^2 - 2x + 2$ **D** $x^2 + 2x + 2$

2 If $f(x) = x^2 + 7$ and $g(x) = 5 - 2x$, then the correct expression for $f(x) \cdot g(x)$ is:

A $2x^3 - 5x^2 + 14x - 35$ **B** $x^2 - 2x + 12$ **C** $-2x^3 - 5x^2 + 14x + 35$ **D** $-2x^3 + 5x^2 - 14x + 35$

3 If $f(x) = x^2 + 7$ and $g(x) = 5 - 2x$, then the correct expression for $f(g(x))$ is:

A $4x^2 - 20x + 32$ **B** $-2x^2 - 9$ **C** $4x^2 + 32$ **D** $x^2 + 2x + 2$

4 If $f(x) = x + 4$, $g(x) = x^2 - 6$, find expressions for each of the following functions, stating the domain and range in each case.

(a) $f(x) + g(x)$ **(b)** $f(x) - g(x)$

6 If $f(x) = x$, $g(x) = x + 4$, find expressions for each of the following functions, stating the domain and range in each case. Use technology to sketch the new function.

(a) $f(x) \cdot g(x)$ **(b)** $\frac{g(x)}{f(x)}$ **(c)** $\frac{f(x)}{g(x)}$