

Q1. Given the function $f(x) = 2x - 5$. Find the range of f when the domain is $\{-3 \leq x \leq 3\}$

Q2. If $f(x) = \frac{x-2}{5}$, find the value for k for which $f(k) = 2$

Q3. $f(x) = x^2 + 2$ and $g(x) = 2x + 3$. Find $f(g(x))$ and $g(f(x))$

Q4. $f(x) = 6x^2 - 4x$ and $g(x) = \frac{1}{3x-6}$, $x \neq 2$

(a) Show that $g(f(x)) = \frac{1}{6(3x+1)(x-1)}$

(b) State a suitable domain for $g(f(x))$

Q5. $F(x) = (x - 1)(x + 3)$ and $g(x) = x^2 + 3$.

Show that $f(g(x)) - g(g(x)) = 2x^2$

Q6. $F(x) = \frac{4}{x+2}$ and $g(x) = \frac{2}{x} - 2$, $x \neq -2, 0$

Find $f(g(x))$ in its simplest form

Q7. $F(x) = 3x - 10$ $g(x) = 4 - 2x$ $h(x) = \frac{1}{6}(2 - x)$

- (a) $k(x) = f(g(x))$. Find $k(x)$
- (b) Find a formula for $h(k(x))$
- (c) What is the connection between h and k ?

Q8. The function $f(x) = x^3 + 2$ is shown in the diagram

- (i) State $f^{-1}(x)$
- (ii) Draw the graph of the $f^{-1}(x)$

