

Functions - Section Test

Questions 1 and 2 refer to the function defined by $f(x) = 1 - x^2$, where $-1 \leq x \leq 1$.

1) What is the value of $f(0.5)$ to 2.d.p.?

2) What is the **range** of $f(x)$?

$$\boxed{} \leq f(x) \leq \boxed{}$$

Questions 3 and 4 refer to the function defined by $f(x) = x^2 - x - 6$

3) What is the value of $f(-4)$?

4) Write an expression for $f(2x)$:

$$\boxed{}x^2 - \boxed{}x - \boxed{}$$

5) The **domain** of the function $f(x) = \frac{1}{x^2 + x - 2}$ is all x other than $x = a$ and $x = b$ where $a < b$. What are the values of a and b ?

6) Suppose $f(x) = x^2$ and $g(x) = x - 1$. Which of the following is $f \circ g(6)$?

(a) 24

(b) 36

(c) 35

(d) 25

7) Suppose $f(x) = x^2$ and $g(x) = (x + 1)^3$. Which of the following is $f \circ g(x)$?

(a) $f \circ g(x) = (x + 1)^5$

(b) $f \circ g(x) = (x + 1)^6$

(c) $f \circ g(x) = (x^2 + 1)^6$

(d) $f \circ g(x) = (x^2 + 1)^3$

8) f and g are inverse functions. Suppose $f(1) = 3$, $f(2) = 4$, $f(3) = 1$ and $f(4) = 2$. What is $g(1) + g(3)$?

9) For which value of c is $f(x) = x + 3$ the inverse function to $g(x) = x + c$?

10) Suppose $f(x) = ax + b$ where $a \neq 0$. Which of the following functions g is the inverse function to f ?

(a) $g(x) = \frac{x-a}{b}$

(b) $g(x) = \frac{x+b}{a}$

(c) $g(x) = \frac{x-b}{a}$

(d) $g(x) = \frac{x-b}{a}$