

Function Notation Quiz

Level 1 – 2

1. If $f(x) = 3 - x$ calculate:

a) $f(1)$ b) $f(-3)$ c) $f(0)$

2. If $f(x) = \frac{12}{x}$ calculate:

a) $f(3)$ b) $f(1)$ c) $f(-2)$

3. If $f(x) = (x - 1)^2$ calculate:

a) $f(2)$ b) $f(-4)$ c) $f(\frac{1}{2})$

4. If $f(x) = \frac{x-2}{x-1}$ calculate:

a) $f(-1)$ b) $f(2)$ c) $f(0)$

5. If $y = f(x)$ and $f(x) = x + 3$ determine the value of x for the following values of y :

a) 3

b) 7

c) -6

6. If $y = f(x)$ and $f(x) = 6 - 2x$ determine the value of x for the following values of y :

a) 8

b) 2

c) -4

7. If $y = g(x)$ and $g(x) = \frac{1}{x}$ determine the value of x for the following values of y :

a) 0.5

b) -1

c) 4

Level 3 – 4

8. If $f(x) = 2x + 3$ determine the following expressions. Expand and simplify where possible:

a) $f(x + 4)$

b) $f(3 - x)$

c) $f(2x)$

d) $f(-3x)$

e) $f(x^2)$

f) $f(2x + 1)$

9. If $f(x) = x^2 - 1$ determine the following expressions. Expand and simplify where possible:

a) $f(x - 1)$

b) $f(-x)$

c) $f(\sqrt{x})$

d) $f(2 - x)$

e) $f(3x)$

f) $f(2x - 1)$

10. If $f(x) = \frac{x+4}{x-1}$ determine the following expressions. Write your answers in the form $\frac{ax+b}{cx+d}$ where a, b, c and d are all integers.

a) $f(2 - x)$

b) $f(\frac{x}{3})$

Level 5 – 6

11. A function $f(x)$ is *even* if $f(x) = f(-x)$. The function is *odd* if $f(x) = -f(-x)$. Determine whether the following functions are even, odd or neither. Justify your answers.

a) $f(x) = 3x^2$

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b) $f(x) = 3 - x$

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c) $f(x) = x^3 - 2x$

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12. Write down a function that is both even and odd. Justify your answer.

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13. If $f(x) = x^2$ and $g(x) = x + 1$, solve the equation $f(g(x)) = 16$.

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14. If $f(x) = 3 - x$ and $g(x) = \frac{3}{x}$, solve the equation $f(g(x)) = 2$.

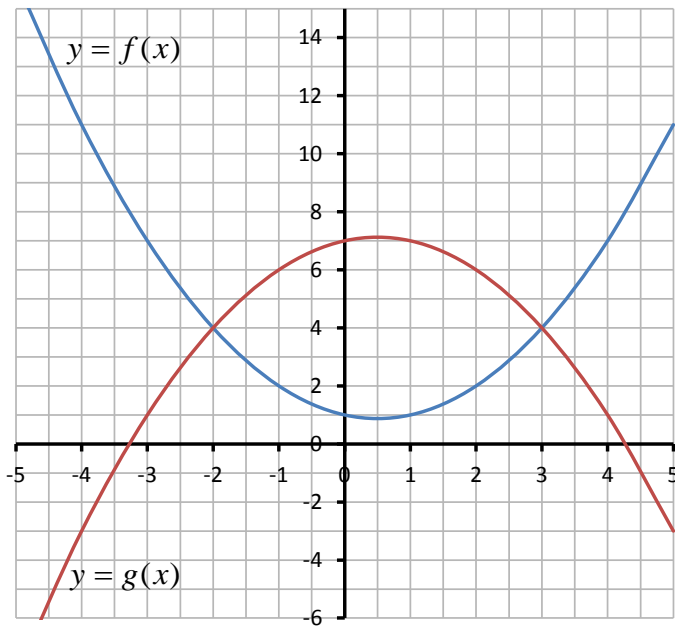
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15. Use the graphs to find **integer** solutions to the following.



i) $f(x) = g(x)$

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ii) $g(f(x)) = 1$

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iii) $f(g(x)) = 7$

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16. Determine $f(x)$ for the following. Expand and simplify your answers where possible:

a) $f(2x - 6) = 2 - 4x$

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b) $f(\sqrt{x - 3}) = 2x + 1$

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17. If $f(x) = x^2 + 6x + 9$ and $g(f(x)) = x + 1$, determine $g(x)$.

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18. Let $f(x) = \frac{x}{1+x}$ and:

$$f^1(x) = f(x)$$

$$f^2(x) = f(f(x))$$

$$f^3(x) = f(f(f(x)))$$

etc.

a) Write down the following functions in terms of x . Simplify your answers.

i) $f^1(x)$

ii) $f^2(x)$

iii) $f^3(x)$

iv) $f^4(x)$

b) Solve the equation $f^n(1) = 0.2$ for n .

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