0607 International Mathematics Paper 2 - Functions

Topical questions | 15 questions

1. Question | 0607 Feb-March 2025 P2 V2 Q22

22 The equation of a quadratic function is $y = ax^2 + bx + c$.
The vertex of the quadratic function is at (1, 3).
The quadratic function passes through the point (2, 5).

Find the equation of the quadratic function.

$y =$ ..... [4]

2. Question | 0607 May-June 2025 P2 V1 Q18

18 **(a)** $f(x) = 3x - 2$ $g(x) = 5 - x$

(i) Find $f(-4)$.

..... [1]

(ii) Find $g^{-1}(x)$.

$g^{-1}(x) =$ ..... [1]

(iii) Solve $gf(x) = 1$.

..... [3]

(b) $h(x)$ is a function with an inverse function $h^{-1}(x)$.

Find $hh^{-1}(x)$.

..... [1]

3. Question | 0607 May-June 2025 P2 V2 Q19

19 $\mathrm{f}(x) = \dfrac{1}{5x-4}$, $x \neq 0.8$

(a) Find $\mathrm{f}(2)$.

..... [1]

(b) Solve $\mathrm{f}(x) = \dfrac{1}{11}$.

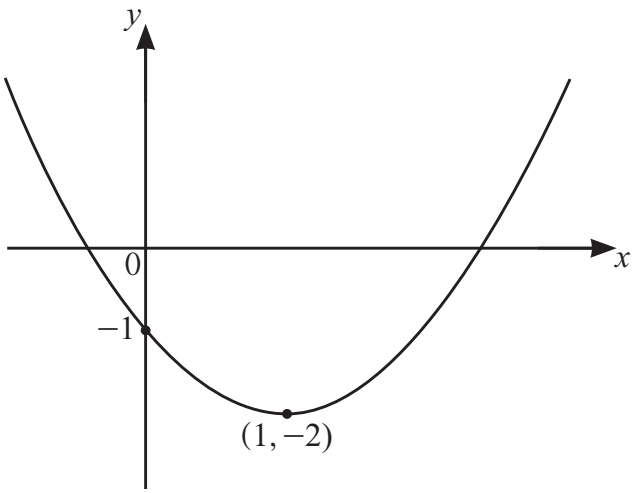
..... [2]

(c) Find $\mathrm{f}^{-1}(x)$.

$\mathrm{f}^{-1}(x) =$ ..... [3]

4. Question | 0607 May-June 2025 P2 V3 Q17

17



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The diagram shows a sketch of the graph of $y = x^2 + ax + b$.
The point (1, –2) is a minimum.

Find the value of a and the value of b.

$a =$ .....

$b =$ .....

[3]

5. Question | 0607 May-June 2025 P2 V3 Q19

19 Solve.
Give each answer as an exact value.

(a) $2^x = 5$

$x =$ ..... [1]

(b) $2 \log y = 1$

$y =$ ..... [1]

6. Question | 0607 Oct-Nov 2025 P2 V1 Q15

15 $f(x) = 3x - 1$ $g(x) = 3 - 2x$ $h(x) = x^2 - 2x + 3$

(a) Find $f(-3)$.

..... [1]

(b) Find $f^{-1}(10)$.

..... [2]

(c) Find and simplify $gh(x)$.

..... [2]

(d) Find $g^{-1}(x)$.

$g^{-1}(x) =$ ..... [2]

(e) Solve $h(x) = f(x)$.

$x =$ ..... or $x =$ ..... [4]

7. Question | 0607 Oct-Nov 2025 P2 V2 Q15

15 The graph of $y = (x+h)^2 + k$ has a vertex at $(-3, -2)$.

Find the value of h and the value of k.

$h =$ .....

$k =$ .....

[2]

8. Question | 0607 Oct-Nov 2025 P2 V2 Q19

19 $f(x) = 4^{2x}$

Solve the equation $f(x) = 1$.

$x =$ ..... [1]

9. Question | 0607 Oct-Nov 2025 P2 V3 Q18

18 $f(x) = 5 - 3x$ $g(x) = \log x$

(a) Find f(3).

..... [1]

(b) Find $f^{-1}(x)$.

$f^{-1}(x) =$ ..... [2]

(c) Find $gf\left(-\frac{5}{3}\right)$.

..... [2]

10. Question | 0607 Specimen 2025 P2 Q15

15 $f(x) = 2x^3 - 1$ $g(x) = 1 - 2x$ $h(x) = 3^{2x}$

(a) Find $g^{-1}(x)$.

$g^{-1}(x) =$ ..... [2]

(b) Solve the equation $f^{-1}(x) = 4$.

$x =$ ..... [2]

(c) Find $h(2)$.

..... [1]

(d) Solve the equation $h(x) = \frac{1}{9}$.

$x =$ ..... [1]

(e) Find $h^{-1}(x)$.

$h^{-1}(x) =$ ..... [2]

11. Question part 1/2 | 0607 Feb-March 2026 P2 V2 Q18

18 $f(x) = 2x - 3$ $g(x) = x^2 + 1$

(a) Find $fg(2)$.

..... [2]

(b) Find $f^{-1}(x)$.

$f^{-1}(x) =$ ..... [2]

(c) Find $gf(x)$.
Give your answer in the form $ax^2 + bx + c$.

..... [3]

11. Question part 2/2 | 0607 Feb-March 2026 P2 V2 Q18

(d) $\mathrm{h}(x) = px + q$

$\mathrm{fh}(x) = 8x - 1$

Find the value of p and the value of q.

$p =$ .....

$q =$ .....

[3]

12. Question | 0607 May-June 2026 P2 V1 Q12

12 Describe fully the **single** transformation that maps the graph of $y = g(x)$ onto the graph of $y = g(x-2)$.

.....

..... [2]

13. Question | 0607 May-June 2026 P2 V1 Q18

18 Write down the value of $\log_4 64$.

..... [1]

14. Question part 1/2 | 0607 May-June 2026 P2 V2 Q16

16 **(a)** $f(x) = 2x + 1$

(i) Find f(2).

..... [1]

(ii) Find $f^{-1}(x)$.

$f^{-1}(x) =$ ..... [2]

(b) $g(x) = \frac{1}{x+2}$, $x \neq -2$

Find gg(x).
Give your answer as a fraction in its simplest form.

..... [3]

14. Question part 2/2 | 0607 May-June 2026 P2 V2 Q16

(c) $\mathrm{h}(x) = 1 + \log_3 x$

(i) $\mathrm{h}(x) = 3$

Find the value of x.

$x =$ ..... [2]

(ii) Find $\mathrm{h}^{-1}(x)$.

$\mathrm{h}^{-1}(x) =$ ..... [2]

15. Question | 0607 May-June 2026 P2 V3 Q15

15 $f(x) = 3x + 1$ $g(x) = 2^x$ $h(x) = \log x$

(a) Work out.

(i) $f(-1)$

..... [1]

(ii) $g(5)$

..... [1]

(iii) $h(1)$

..... [1]

(b) Solve.

(i) $f(x) = 13$

$x =$ ..... [2]

(ii) $g(x) = 0.25$

$x =$ ..... [2]

(c) Solve.

$gf(x) = 4h(100)$

$x =$ ..... [4]