Name:

Level 2 Further Maths

Function Notation
Composite Functions
Inverse Functions

Corbettmaths

Ensure you have: Pencil or pen

Guidance

1. Read each question carefully before you begin answering it.
2. Check your answers seem right.
3. Always show your workings

Revision for this topic

www.corbettmaths.com/more/further-maths/

1. $f(x) = x^3 - 27$ for all values of x

$g(x) = x^2 - 25$ for all values of x

$h(x) = x^2 - 3x + 4$

(a) Work out the value of $f(5)$

.....

(1)

(b) Work out the value of $h(-2)$

.....

(1)

(c) Work out the value of x, such that $f(x) = 0$

.....

(2)

(d) Work out the value of x, such that $g(x) = 11$

.....

(2)

(e) Work out the value of x, such that $h(x) = 14$

.....

(3)

(f) Work out the value of x, such that $g(x) = h(x)$

.....

(3)

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2. $f(x) = sinx$ for all values of x
   $g(x) = cosx$ for all values of x

(a) Calculate the value of $f(630°)$

.....

(1)

(b) Calculate the value of $g(-90°)$

.....

(1)

3. $f(x) = 2x - 7$ for all values of x

Solve $f(x^2) = x - 1$

.....

(4)

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4. $f(x) = (x + 7)(x - 3q)$ for all values of x

$g(x) = 2x^2 - 6x - 30$ for all values of x

(a) Given $f(0) = -42$

Show that $q = 2$

(1)

(b) Solve $f(x) = g(x)$

.....

(3)

5. $f(x) = 4x^4 - x^2$ for all values of x

Show that $f(5x) = ax^2(bx - 1)(bx + 1)$ where a and b are integers.

.....

(3)

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6. $f(x) = 8x - 7$

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

.....

(2)

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7. $g(x) = 5 - \dfrac{2 - 3x}{4}$

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

.....

(2)

8. $f(x) = x + 7$

$g(x) = 4x - 1$

$h(x) = x^2 - 2$

(a) Find $gf(x)$

.....

(2)

(b) Find $hh(x)$

.....

(2)

(c) Work out the value of $fh(-3)$

.....

(2)

9. $f(x) = x + 3$

$g(x) = x^2 - 25$

Solve $gf(x) = 0$

.....

(3)

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10. $f(x) = kx + 7$

$g(x) = 3x - 2$

Given that $gf(1) = 34$

Find the value of k

.....

(3)

11. $f(x) = \dfrac{3}{x+4}$ for all positive values of x

Work out $f(x+2) + f(x+1)$

Give your answer as a single fraction in its simplest form.

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(5)

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12. $f(x) = \dfrac{3-x^2}{8}$ for all values of x

Solve $f(10x) = -7$

.....

(4)

13. $f(x) = x^2 + 5$

$g(x) = x - 8$

Solve $fg(x) = gf(x)$

.....

(5)

14. $f(x) = x^2 - 2x$

Solve $f(3x) - f(x - 1) = 4$

Give your answers to 2 decimal places

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(7)