7.9 Inverse and Composite Functions: 1-hour Pack

EDEXCEL 1MA1 · Calculator allowed · about 60 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 f(x) = 4x and g(x) = x^2. Work out gf(-2).

(Total for Question 1 is 2 marks)

2 f(x) = -5x - 4 and g(x) = -2x - 5. Solve fg(x) = -19.

(Total for Question 2 is 3 marks)

3 f(x) = -x - 6 and g(x) = -5x + 5. Find fg(x). Give your answer in its simplest form.

(Total for Question 3 is 3 marks)

4 f(x) = (x + 2)/6. Work out $f^{-1}(1)$.

(Total for Question 4 is 2 marks)

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5 $f(x) = 4x - 2$ and $g(x) = 2x + 5$. Solve $fg(x) = 2$.

(Total for Question 5 is 3 marks)

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6 $f(x) = 3x + 5$. Find the inverse function $f^{-1}(x)$.

(Total for Question 6 is 3 marks)

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7 $f(x) = 3x + 6$ and $g(x) = x^2 - 1$. Work out $fg(3)$.

(Total for Question 7 is 2 marks)

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8 $f(x) = -4x + 4$ and $g(x) = -x + 2$. Find $fg(x)$. Give your answer in its simplest form.

(Total for Question 8 is 3 marks)

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9 $f(x) = (x + 2)/2$. Work out $f^{-1}(-1)$.

(Total for Question 9 is 2 marks)

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10 $f(x) = (x + 6)^2$, $x \geq -6$. Find the inverse function $f^{-1}(x)$.

(Total for Question 10 is 3 marks)

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11 $f(x) = x - 4$ and $g(x) = x - 3$. Find $fg(x)$. Give your answer in its simplest form.

(Total for Question 11 is 3 marks)

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12 $f(x) = 4x + 4$ and $g(x) = x^2 - 7$. Work out $gf(0)$.

(Total for Question 12 is 2 marks)

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13 $f(x) = 7x + 4$. Find the inverse function $f^{-1}(x)$.

(Total for Question 13 is 3 marks)

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14 $f(x) = -5x - 2$ and $g(x) = 4x + 4$. Find $gf(x)$. Give your answer in its simplest form.

(Total for Question 14 is 3 marks)

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15 $f(x) = (x + 6)/6$. Work out $f^{-1}(7)$.

(Total for Question 15 is 2 marks)

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16 $f(x) = -2x - 2$ and $g(x) = 5x - 1$. Solve $fg(x) = 30$.

(Total for Question 16 is 3 marks)

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17 $f(x) = 2x - 3$ and $g(x) = x^2 + 2$. Work out $fg(-3)$.

(Total for Question 17 is 2 marks)

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18 $f(x) = x + 4$ and $g(x) = 3x - 4$. Find $fg(x)$. Give your answer in its simplest form.

(Total for Question 18 is 3 marks)

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Mark scheme · 7.9 Inverse and Composite Functions: 1-hour Pack

Question 1

f(-2) = -8	**M1**
64	**A1**

Answer: 64

Question 2

fg(x) = -5(-2x - 5) - 4	**M1**
10x + 21 = -19 and attempts to solve	**M1**
x = -4	**A1**

Answer: x = -4

Question 3

substitutes g(x) into f	**M1**
expands brackets	**M1**
5x - 11	**A1**

Answer: 5x - 11

Question 4

$1 = (x + 2)/6$ or finds $f^{-1}(x)$	**M1**
4	**A1**

Answer: 4

Question 5

fg(x) = 4(2x + 5) - 2	**M1**
8x + 18 = 2 and attempts to solve	**M1**
x = -2	**A1**

Answer: x = -2

Question 6

writes y = f(x) and attempts to rearrange for x	**M1**
correct rearrangement	**M1**
(x - 5)/3 oe	**A1**

Answer: (x - 5)/3

Question 7

g(3) = 8	**M1**
30	**A1**

Answer: 30

Question 8

substitutes g(x) into f	**M1**
expands brackets	**M1**
4x - 4	**A1**

Answer: 4x - 4

Question 9

$-1 = (x + 2)/2$ or finds $f^{-1}(x)$	**M1**
-4	**A1**

Answer: -4

Question 10

writes y = f(x) and rearranges	**M1**
takes the positive square root	**M1**
$\sqrt{x}$ - 6 oe	**A1**

Answer: $\sqrt{x}$ - 6

Question 11

substitutes g(x) into f	**M1**
expands brackets	**M1**
x - 7	**A1**

Answer: x - 7

Question 12

f(0) = 4	**M1**
9	**A1**

Answer: 9

Question 13

writes y = f(x) and attempts to rearrange for x	**M1**
correct rearrangement	**M1**
(x - 4)/7 oe	**A1**

Answer: (x - 4)/7

Question 14

substitutes f(x) into g	**M1**
expands brackets	**M1**
-20x - 4	**A1**

Answer: -20x - 4

Question 15

$7 = (x + 6)/6$ or finds $f^{-1}(x)$	**M1**
36	**A1**

Answer: 36

Question 16

fg(x) = -2(5x - 1) - 2	**M1**
-10x = 30 and attempts to solve	**M1**
x = -3	**A1**

Answer: x = -3

Question 17

g(-3) = 11	**M1**
19	**A1**

Answer: 19

Question 18

substitutes g(x) into f	**M1**
expands brackets	**M1**
3x	**A1**

Answer: 3x

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