

A2.A.42: Compositions of Functions 1: Find the composition of functions

- 1 If $f(x) = \frac{1}{2}x - 3$ and $g(x) = 2x + 5$, what is the value of $(g \circ f)(4)$?
 - 1) -13
 - 2) 3.5
 - 3) 3
 - 4) 6
- 2 If $g(x) = \frac{1}{2}x + 8$ and $h(x) = \frac{1}{2}x - 2$, what is the value of $g(h(-8))$?
 - 1) 0
 - 2) 9
 - 3) 5
 - 4) 4
- 3 If $f(x) = -2x + 7$ and $g(x) = x^2 - 2$, then $f(g(3))$ is equal to
 - 1) -7
 - 2) -3
 - 3) -1
 - 4) 7
- 4 If $f(x) = 2x^2 + 1$ and $g(x) = 3x - 2$, what is the value of $f(g(-2))$?
 - 1) -127
 - 2) -23
 - 3) 25
 - 4) 129
- 5 If $f(x) = 3x^2$ and $g(x) = \sqrt{2x}$, what is the value of $(f \circ g)(8)$?
 - 1) $8\sqrt{6}$
 - 2) 16
 - 3) 48
 - 4) 144
- 6 If $f(x) = 5x^2$ and $g(x) = \sqrt{2x}$, what is the value of $(f \circ g)(8)$?
 - 1) $8\sqrt{10}$
 - 2) 16
 - 3) 80
 - 4) 1,280
- 7 If $f(x) = x^2 + 4$ and $g(x) = \sqrt{1-x}$, what is the value of $f(g(-3))$?
 - 1) $2i\sqrt{3}$
 - 2) 2
 - 3) 8
 - 4) 13
- 8 If $g(x) = \sqrt{x}$ and $h(x) = x^3 - 1$, what is $g(h(4))$?
 - 1) 5
 - 2) 7
 - 3) $\sqrt{11}$
 - 4) $\sqrt{63}$

- 9 If $f(x) = x - 3$ and $g(x) = x^3$, find $f(g(3))$.
- 0
 - 6
 - 24
 - 30
- 10 If $f(x) = 4x - x^2$ and $g(x) = \frac{1}{x}$, then $(f \circ g)\left(\frac{1}{2}\right)$ is equal to
- $\frac{4}{7}$
 - 2
 - $\frac{7}{2}$
 - 4

- 11 The temperature generated by an electrical circuit is represented by $t = f(m) = 0.3m^2$, where m is the number of moving parts. The resistance of the same circuit is represented by $r = g(t) = 150 + 5t$, where t is the temperature. What is the resistance in a circuit that has four moving parts?
- 51
 - 156
 - 174
 - 8,670

- 12 If $f(x) = x + 1$ and $g(x) = x^2 - 1$, the expression $(g \circ f)(x)$ equals 0 when x is equal to
- 1 and -1
 - 0, only
 - 2, only
 - 0 and -2

- 13 If $f(x) = 2x^2 + 4$ and $g(x) = x - 3$, which number satisfies $f(x) = (f \circ g)(x)$?
- $\frac{3}{2}$
 - $\frac{3}{4}$
 - 5
 - 4

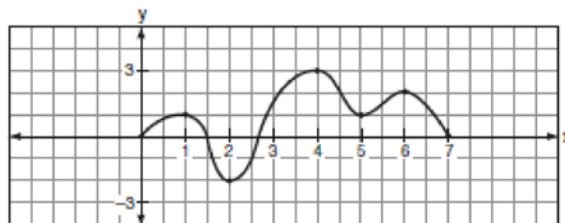
- 14 The accompanying tables define functions f and g .

x	1	2	3	4	5
$f(x)$	3	4	5	6	7

x	3	4	5	6	7
$g(x)$	4	6	8	10	12

What is $(g \circ f)(3)$?

- 6
 - 2
 - 8
 - 4
- 15 The accompanying graph is a sketch of the function $y = f(x)$ over the interval $0 \leq x \leq 7$.



What is the value of $(f \circ f)(6)$?

- 1
- 2
- 0
- 2

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Answer Section

1 ANS: 3 REF: fall0902a2

2 ANS: 3

$$h(-8) = \frac{1}{2}(-8) - 2 = -4 - 2 = -6. \quad g(-6) = \frac{1}{2}(-6) + 8 = -3 + 8 = 5$$

REF: 011403a2

3 ANS: 1 REF: 010501b

4 ANS: 4

$$g(-2) = 3(-2) - 2 = -8 \quad f(-8) = 2(-8)^2 + 1 = 128 + 1 = 129$$

REF: 061503a2

5 ANS: 3 REF: 069915siii

6 ANS: 3 REF: 010207b

7 ANS: 3 REF: 060806b

8 ANS: 4 REF: 069423siii

9 ANS: 3 REF: 019820siii

10 ANS: 4

$$g\left(\frac{1}{2}\right) = \frac{1}{\frac{1}{2}} = 2. \quad f(2) = 4(2) - 2^2 = 4$$

REF: 011204a2

11 ANS: 3 REF: 060605b

12 ANS: 4 REF: 060417b

13 ANS: 1 REF: 060210b

14 ANS: 3 REF: 010812b

15 ANS: 4 REF: 080520b