

Name: _____

Date: _____

Instructions: Please complete the following problems. Each answer is associated with a letter that creates a secret phrase. You can find the key on the last page.

For problems 1-4, use $f(x) = x - 4$ and $g(x) = x^2 - 2x - 8$

Problem 1. Find $(f + g)(x)$

Problem 2. Find $(f - g)(x)$

Problem 3. Find $(f \cdot g)(x)$

Problem 4. Find $(\frac{f}{g})(x)$

For problems 5-8, use $f(x) = 3x$ and $g(x) = -x$

Problem 5. Find $(f + g)(-1)$

Problem 6. Find $(f - g)(0)$

Problem 7. Find $(f \cdot g)(2)$

Problem 8. Find $(\frac{f}{g})(1)$

For problems 9-12, use $f(x) = 4x + 2$ and $g(x) = -x^2 + 2$

Problem 9. Find $(f + g)(1)$

Problem 10. Find $(f - g)(2)$

Problem 11. Find $(f \cdot g)(-3)$

Problem 12. Find $(\frac{f}{g})(1)$

Problem 13. Given $f(x) = 2x + 1$ and $g(x) = 2x^2 - 3$, find $(f \circ g)(x)$

Problem 14. Given $f(x) = 2x + 1$ and $g(x) = 2x^2 - 3$, find $(g \circ f)(x)$

Problem 15. Given $f(x) = x^2 + 2$ and $g(x) = 1 - 2x$. Find the average rate of change of the composite function $f \circ g$ as x changes from $a = 1$ to $b = 2$.

Problem 16. Given $f(x) = x^2 - 3$ and $g(x) = 3x - 4$. Find the average rate of change of the composite function $g \circ f$ as x changes from $a = -3$ to $b = 4$.

Problem 17. True or False: $(f \circ g)(x)$ is always equal to $(g \circ f)(x)$

A	False
B	$x^2 - 9x + 11$
C	composite functions
D	plug f into g
E	$\frac{1}{x+2}$
E	6
F	yes
G	8
G	70
H	$x^3 - 6x^2 + 32$
H	12
I	-3
I	3
J	-80
K	True
L	-2
L	0
M	plug g into f
N	38
O	$-x^2 + 3x + 4$
O	$4x^2 - 5$
P	$x^5 - x^4 + 12$
Q	always
R	$8x^2 + 8x - 1$
S	polynomial
T	$x^2 - x - 12$
T	7
U	maybe
V	$x^4 + 8$
W	-12
X	$\frac{1}{x}$
Y	combining functions
Z	no

What was the phrase you found? (Hint: 4 words)
