Algebra 2, Unit 4.2

Name _____

Operations with Functions

Date Key

Perform the indicated operation.

1) $g(n) = n^2 + 5n$
$f(n) = -3n$
Find $(g + f)(-2)$

$g(-2) + f(-2)$
$-6 + 6 = \boxed{0}$

2) $f(n) = 2n^2 + 3$
$g(n) = 2n - 2$
Find $(f - g)(2)$

$f(2) - g(2)$
$11 - 2 = \boxed{9}$

3) $f(x) = 4x + 5$
$g(x) = x + 2$
Find $(f \cdot g)(-8)$

$f(-8) \cdot g(-8)$
$-27 \cdot -6$
$\boxed{162}$

4) $f(x) = 4x - 4$
$g(x) = x^2 - 3 + 2x$
Find $\left(\frac{f}{g}\right)(-5)$

$\frac{f(-5)}{g(-5)} = \frac{-24}{12} = \boxed{-2}$

5) $g(x) = 3x + 3$
$f(x) = 3x + 2$
Find $\left(\frac{g}{f}\right)(x)$

$\frac{g(x)}{f(x)} = \boxed{\frac{3x+3}{3x+2}, \; x \neq -\frac{2}{3}}$

6) $g(n) = 3n + 5$
$h(n) = 3n - 2$
Find $(g \cdot h)(n)$

$g(n) \cdot h(n)$
$(3n+5)(3n-2)$
$\boxed{9n^2 + 9n - 10}$

7) $f(x) = x^2 + 2x$
$g(x) = -2x + 5$
Find $(f \cdot g)(x)$

$f(x) \cdot g(x)$
$(x^2+2x)(-2x+5)$
$\boxed{-2x^3 + x^2 + 10x}$

8) $h(n) = n^3 + 2$
$g(n) = 4n - 4$
Find $\left(\frac{h}{g}\right)(n)$

$\frac{h(n)}{g(n)} = \boxed{\frac{n^3+2}{4n-4}, \; n \neq 1}$

9) $h(n) = 3n - 3$
$g(n) = -n^3 + 4n^2 + n$
Find $(h + g)(n)$

$h(n) + g(n)$
$(3n-3) + (-n^3+4n^2+n)$
$\boxed{-n^3 + 4n^2 + 4n - 3}$

10) $f(x) = x^3 + 3x^2$
$g(x) = -x - 2$
Find $(f - g)(x)$

$f(x) - g(x)$
$(x^3+3x^2) - (-x-2)$
$\boxed{x^3 + 3x^2 + x + 2}$

Name Key

Operations and Compositions of Functions

Perform the indicated operation.

1) $g(a) = 4a - 1$
$h(a) = a^2 + 5$
Find $g(h(a))$
$4a^2 + 19$

2) $f(x) = 2x - 1$
$g(x) = -3x^2 - 2x$
Find $(f \circ g)(x)$
$-6x^2 - 4x - 1$

3) $g(n) = -n - 3$
$h(n) = n^2 + 1$
Find $(g \circ h)(n)$
$-n^2 - 4$

4) $h(n) = -n - 1$
$g(n) = n^2 - n$
Find $(h \circ g)(n)$
$-n^2 + n - 1$

5) $h(t) = -2t - 5$
$g(t) = -3t^2 - 2t$
Find $h(g(t))$
$6t^2 + 4t - 5$

6) $f(a) = a - 2$
$g(a) = -3a^2 - 1$
Find $(f \circ g)(a)$
$-3a^2 - 3$

7) $g(x) = 2x - 5$
$f(x) = 4x + 2$
Find $g(f(x))$
$8x - 1$

8) $h(x) = -3x - 3$
$g(x) = x^3 + 2x^2$
Find $(h \circ g)(x)$
$-3x^3 - 6x^2 - 3$

9) $g(a) = a^2 + 3$
$h(a) = 4a + 4$
Find $g(h(a))$
$16a^2 + 32a + 19$

10) $f(x) = x^2 + 5$
$g(x) = 3x + 3$
Find $f(g(x))$
$9x^2 + 18x + 14$