Operations With Functions

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Sum $(f+g)(x) = f(x) + g(x)$

f plus g of x f of x plus g of x

$f(x) = 5x^2 - 2x + 3$ and $g(x) = 4x^2 + 7x - 5$

Find $f + g$ (add)

$5x^2 - 2x + 3 + (4x^2 + 7x - 5)$

$9x^2 + 5x - 2$

Difference $(f-g)(x) = f(x) - g(x)$

$f(x) = 5x^2 - 2x + 3$ and $g(x) = 4x^2 + 7x - 5$

Find $f - g$ (subtract)

$5x^2 - 2x + 3 - (4x^2 + 7x - 5)$

Distribute the negative

$5x^2 - 2x + 3 - 4x^2 - 7x + 5$

$x^2 - 9x + 8$

Product $(f \cdot g)(x) = f(x) \cdot g(x)$

$f(x) = 5x^2$ and $g(x) = 3x - 1$

Find $f \cdot g$

$5x^2(3x - 1)$

$15x^3 - 5x^2$

Quotient $\left(\frac{f}{g}\right)(x) = \frac{f(x)}{g(x)}$ Where $g(x) \neq 0$

$f(x) = 5x^2$ and $g(x) = 3x - 1$

Find $\frac{f}{g}$ and state any domain restrictions

$\frac{5x^2}{3x-1}$ where $x \neq \frac{1}{3}$

D.R. / set den. = 0

$3x - 1 = 0$

$3x = 1$

$x = 1/3$

Algebra 2 Name _____ ID: 1

Function Operations Practice

Date _____ Period ____

Perform the indicated operation.

1) $h(x) = x + 2$
$g(x) = -4x + 4$
Find $h(x) + g(x)$

$x+2+-4x+4$

$-3x+6$

2) $g(x) = x^2 + 1$
$f(x) = 4x + 3$
Find $g(x) - f(x)$

$x^2+1-(4x+3)$

$x^2+1-4x-3$

x^2-4x-2

3) $h(n) = 3n + 5$
$g(n) = 3n^2 + 5n$
Find $h(n) + g(n)$

$3n+5+3n^2+5n$

$3n^2+8n+5$

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

$2a+2-(a^2-2a)$

$2a+2-a^2+2a$

$-a^2+4a+2$

5) $f(n) = 4n + 3$
$g(n) = -n - 3$
Find $f(n) \cdot g(n)$

$(4n+3)(-n-3)$

$-4n^2-12n-3n-9$

$-4n^2-15n-9$

6) $g(n) = 4n - 1$
$h(n) = n^2 - 2n$
Find $g(n) \div h(n)$

$\frac{4n-1}{n^2-2n}$, where $n \neq 0$, $n \neq 2$

$n^2-2n=0$

$n(n-2)=0$

$n=0$ $n-2=0$

$n=2$

7) $g(n) = 2n - 4$
$f(n) = n^2 - 2$
Find $g(n) \cdot f(n)$

$(2n-4)(n^2-2)$

$2n^3-4n-4n^2+8$

$2n^3-4n^2-4n+8$

8) $g(x) = x^2 - 4x$
$h(x) = 2x + 5$
Find $g(x) + h(x)$

$x^2-4x+2x+5$

x^2-2x+5

9) $h(t) = 4t - 2$
$g(t) = t - 5$
Find $h(t) - g(t)$

$4t-2-(t-5)$

$4t-2-t+5$

$3t+3$

10) $f(n) = n + 3$
$g(n) = -3n^2 + 4n$
Find $f(n) \div g(n)$

$\frac{n+3}{-3n^2+4n}$, where $n \neq 0$, $n \neq 4/3$

D.R:
$-3n^2+4n=0$

$n(-3n+4)=0$

$n=0$ $-3n+4=0$

$n=4/3$

11) $g(x) = -4x - 5$
$h(x) = x^2 - 5x$
Find $g(x) + h(x)$

12) $g(x) = 4x$
$h(x) = 3x^2 - 3$
Find $g(x) \cdot h(x)$

13) $g(n) = 2n^2 + 5n$
$h(n) = n + 2$
Find $g(n) \cdot h(n)$

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

15) $g(x) = 2x$
$h(x) = -3x - 1$
Find $g(-3) \cdot h(-3)$

$g(-3) = 2(-3) = -6$

$h(-3) = -3(-3) - 1 = 8$

$8(-6) = -48$

$2x(-3x-1)$

$-6x^2 - 2x$

$-6(-3)^2 - 2(-3)$

$-6(9) + 6$

$-54 + 6$

-48

16) $g(t) = -2t^2 + 1$
$f(t) = 4t - 1$
Find $g(3) \cdot f(3)$

-3^2

17) $h(t) = t - 3$
$g(t) = -3t^3 + 5$
Find $h(2) \cdot g(2)$

18) $g(a) = -a - 5$
$h(a) = 3a + 2$
Find $g(-9) + h(-9)$

19) $g(n) = n + 5$
$h(n) = n^2 + n$
Find $g(-3) + h(-3)$

20) $f(n) = 3n + 4$
$g(n) = 2n + 4$
Find $f(1) \div g(1)$