2.6 Notes The Algebra of Functions

The Sum different product or Quotient of Two Functions

Example 1: Let $f(x) = x + 4$ and $g(x) = x^2 + 1$. Find f(2) + g(2)

add

$f(2) = 2+4 = 6$

$g(2) = 2^2+1 = 5$

$f(2) + g(2) = 6+5 = 11$

Example 2: $f(x) = x^2 - x$ **and** $g(x) = x + 2$ **Find the following.**

$f(4)+g(4)$

1. $(f+g)(x)$ $= f(x) + g(x)$ $= x^2 - x + x + 2 = x^2 + 2$	2. $(f+g)(4)$ $(f+g)(x) = x^2+2$ $(f+g)(4) = 4^2+2 = 18$
3. $(f-g)(x)$ $= f(x) - g(x)$ $= x^2 - x - (x+2)$ $= x^2 - x - x - 2 = x^2 - 2x - 2$	4. $(f-g)(-1)$ $=$ $f(-1) - g(-1)$ $(f-g)(x) = x^2 - 2x - 2$ $(f-g)(-1) = (-1)^2 - 2(-1) - 2 = 1+2-2$ $= 1$
5. $(fg)(x) = f(x)\,g(x)$ $= (x^2 - x)(x+2)$	6. $(fg)(4) = f(4)\,g(4)$ $= (4^2-4)(4+2) = (12)(6)$ $= 72$
7. $(f/g)(x) = \frac{f(x)}{g(x)}$ $= \frac{x^2 - x}{x+2}$	8. $(f/g)(-3) = \frac{f(-3)}{g(-3)}$ $= \frac{(-3)^2 - (-3)}{-3+2} = \frac{9+3}{-1} = -12$

Example 2: $f(x) = x^2 - 4$ and $g(x) = x - 6$ Find the following.

1. $(f+g)(x)$ $= x^2 + x - 10$	2. $(f+g)(4)$ $= 10$
3. $(f-g)(x)$ $= x^2 - x + 2$	4. $(f-g)(-1)$ $= 4$
5. $(fg)(x)$ $= (x^2-4)(x-6)$	6. $(fg)(4)$ $= -24$
7. $(f/g)(x)$ $= \frac{x^2-4}{x-6}$	8. $(f/g)(-3)$ $= -\frac{5}{9}$