

# 6-1A Operations of Functions

Let  $f(x)$  and  $g(x)$  be any two functions.

| Operation  | Definition  |
|------------|---|
| sum        | $(f+g)(x) = f(x) + g(x)$  |
| difference | $(f-g)(x) = f(x) - g(x)$ <b>* DISTRIBUTE NEGATIVE!</b>                      |
| product    | $(f \cdot g)(x) = f(x) \cdot g(x)$  |
| quotient   | $\left(\frac{f}{g}\right)(x) = \frac{f(x)}{g(x)}$ <b>* DO NOT simplify.</b> |

Examples: Let  $f(x) = x^2 - 3x + 1$  and  $g(x) = 4x + 5$ , find the following functions.

1.  $(f+g)(x) = x^2 - 3x + 1 + 4x + 5$

$(f+g)(x) = x^2 + x + 6$

2.  $(f-g)(x) =$

$x^2 - 3x + 1 - 4x - 5$   
 $(f-g)(x) = x^2 - 7x - 4$

3.  $(f \cdot g)(x) = (4x+5)(x^2-3x+1)$

$= 4x^3 - 12x^2 + 4x + 5x^2 - 15x + 5$

$(f \cdot g)(x) = 4x^3 - 7x^2 - 11x + 5$

4.  $\left(\frac{f}{g}\right)(x) = \frac{x^2 - 3x + 1}{4x + 5}$

$+,-,x, \div, x^2, \sqrt{\quad}, ||$   
 $(x) \quad / \quad [ \quad ] \quad 0$   
 $f \cdot g$



Page 389,8-16

Page 391,

52, 53, 54