

BOARD NOTES

24 OCTOBER 2018



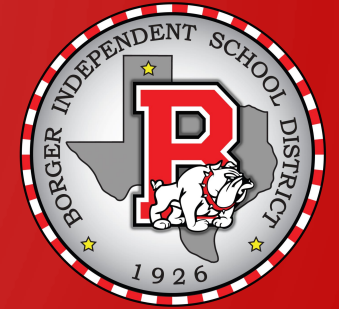
CC PRECALCULUS

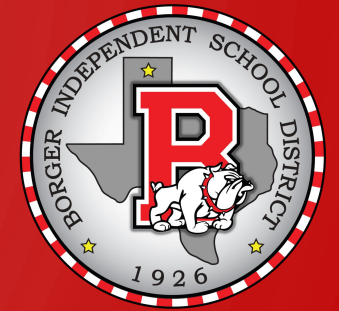
CHAPTER 5 – EXPONENTIAL AND LOGARITHMIC FUNCTIONS

- SECTION 5.1 - COMPOSITE FUNCTIONS

Objectives:

- Form a composite function
- Find the domain of a composite function

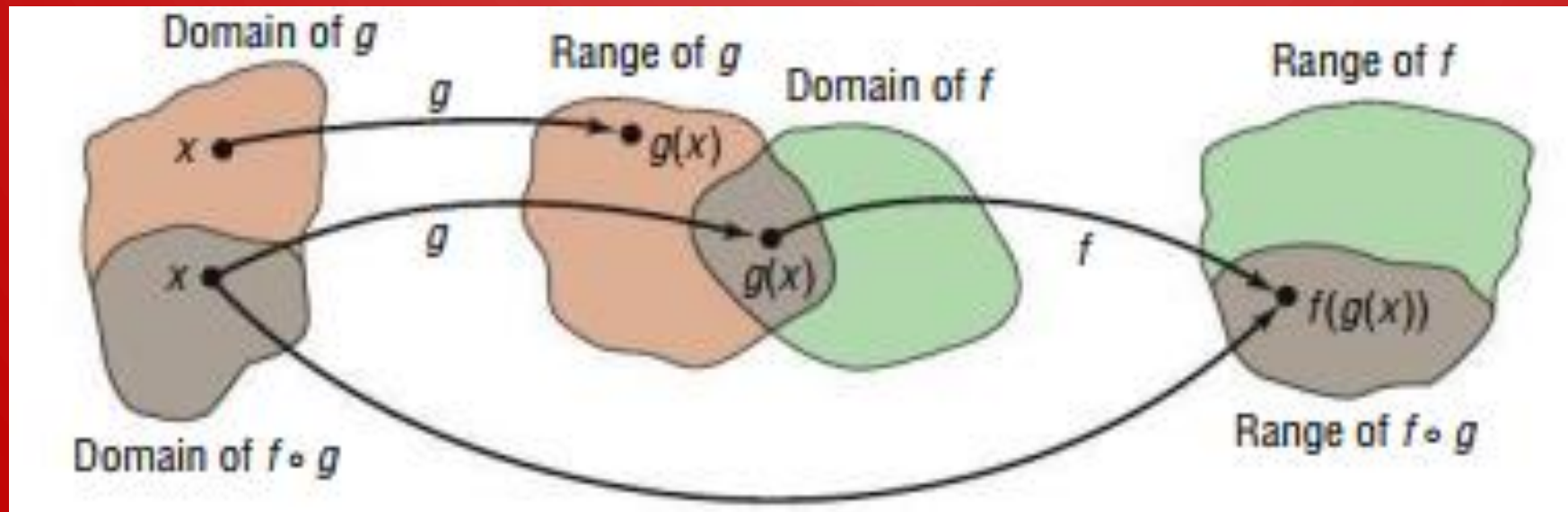




Given two functions f and g , the **composite function**, denoted by $f \circ g$ (read as “ f composed with g ”), is defined by

$$(f \circ g)(x) = f(g(x))$$

The domain of $f \circ g$ is the set of all numbers x in the domain of g such that $g(x)$ is in the domain of f .



$$f(x) = 2x^2 - 3 \quad g(x) = 4x$$

$$f+g = 2x^2 + 4x - 3$$

$$f-g = 2x^2 - 4x - 3$$

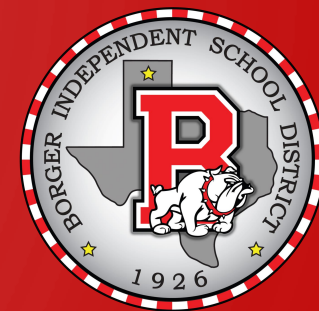
$$fg = 8x^3 - 12x$$

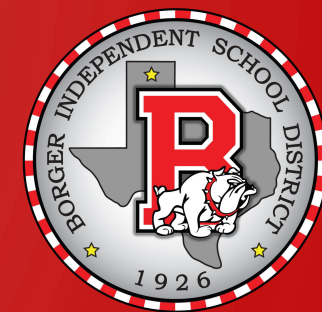
$$f/g = \frac{x}{2} - \frac{3}{4x}$$

$$f(1) = 2(1)^2 - 3 \\ = -1$$

$$f(g(x)) = 2(4x)^2 - 3 \\ = 2(16x^2) - 3 \\ = 32x^2 - 3$$

$$f(g(1)) = 1) \quad f(4) = 2(4)^2 - 3 \\ 2) \quad 32(1)^2 - 3 = 29$$





$$(f \circ g)(x) = f(g(x))$$

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

$$g(x) = 2x + 3$$

$$(f \circ g)(x) = (2x+3)^2 + 3(2x+3) - 1 = 4x^2 + 18x + 17$$

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

$$f(x) = \frac{1}{x+2} \quad D: \{x \mid x \neq -2\}$$

$$g(x) = \frac{1}{x-1} \quad D: \{x \mid x \neq 1\}$$

$$f \circ g$$

$$-2 = \frac{1}{x-1}$$

$$-2x + 2 = 1$$

