

MATH 1314

Chapter 2.8: Algebra of Functions and Function Composition

COMBINATIONS: COMBINE FUNCTIONS

$$f(x) = 2x \quad g(x) = x - 1$$

$$\text{Sum: } (f + g)(x)$$

$$\text{Difference: } (f - g)(x)$$

$$\text{Product } (f \cdot g)(x)$$

$$\text{Quotient: } \left(\frac{f}{g}\right)(x)$$

FIND THE FOLLOWING.

$$(f + g)(2)$$

$$(f \cdot g)(-5)$$

$$\left(\frac{f}{g}\right)(3)$$

DOMAIN:

FRACTION

$$\frac{P(x)}{Q(x)}$$

SQUARE ROOT

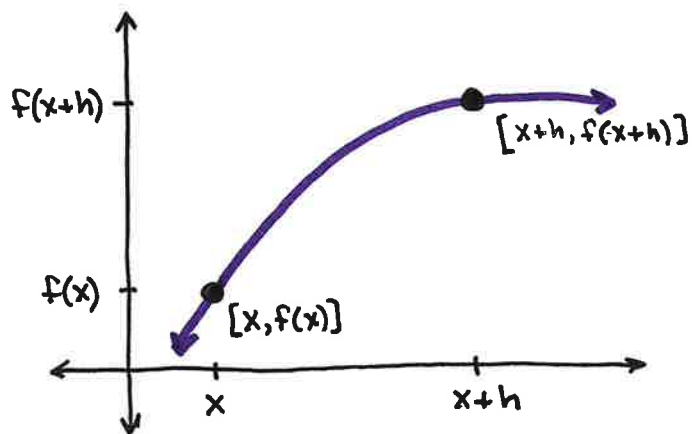
$$\sqrt{f(x)}$$

DIFFERENCE QUOTIENT

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$DQ = \frac{f(x+h) - f(x)}{x+h - x}$$

$$DQ = \frac{f(x+h) - f(x)}{h}$$



FIND THE DIFFERENCE QUOTIENT OF $f(x) = 2x^2 - x + 3$.

COMPOSITE FUNCTION

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

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

$$f(x) = x^2 + x + 5$$

$$g(x) = 4x - 1$$

FIND THE FOLLOWING.

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

$$(f \circ g)(2)$$

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

$$(g \circ f)(-1)$$

$$f(x) = 2x - 6$$

$$g(x) = \frac{1}{x+4}$$

FIND THE DOMAIN OF $(f \circ g)(x)$.