

$$1. f(x) = 3x - x^3, g(x) = x^3$$

$$(f+g)(x) = 3x - x^3 + x^3 = 3x$$

$$(f-g)(x) = 3x - x^3 - x^3 = 3x - 2x^3$$

$$(f \cdot g)(x) = (3x - x^3) x^3 = 3x^4 - x^6$$

$$(f/g)(x) = \frac{3x - x^3}{x^3} = \frac{3}{x^2} - 1$$

$$f(g(1))$$

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

$$g(f(1))$$

$$= (3x - x^3)^3 = (2)^3 = 8$$

$$2. f(x) = 3x + 7$$

$$f(f(x)) = 3(3x + 7) + 7 = 9x + 21 + 7 = 9x + 28$$

$$\text{if } f(f(x)) = 9x + 28 = 100$$

$$x = \frac{100 - 28}{9} = \frac{72}{9} = 8$$

• definition of composition (function)

• composition of functions (composition)

• domain of composition

• composition of functions (composition)

• composition of functions (composition)

• composition of functions (composition)

• composition of functions (composition)

• composition of functions (composition)

examples