

Notes 2.8 Operations on Functions

①

$$(f+g)(x) = f(x) + g(x)$$

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

$$(fg)(x) = f(x) * g(x)$$

$$\left(\frac{f}{g}\right)(x) = \frac{f(x)}{g(x)} \quad g(x) \neq 0$$

Domain: Intersection (overlp) of domains of f and g .

Additionally for Division $\left[\frac{f}{g}\right](x)$ $g(x) \neq 0$

Ex 1 $f(x) = x^2 + 1$ $g(x) = 3x + 5$

(a) $(f+g)(1) = f(1) + g(1)$

$$f(1) = 1^2 + 1 = 2 \quad g(1) = 3(1) + 5 = 8$$

$$(f+g)(1) = 2 + 8 = \boxed{10}$$

(b) $(f-g)(-3) = f(-3) - g(-3)$

$$f(-3) = (-3)^2 + 1 = 9 + 1 = \boxed{10}$$

$$g(-3) = 3(-3) + 5 = -9 + 5 = \boxed{-4}$$

$$(f-g)(-3) = 10 - (-4) = \boxed{14}$$

2.8 Ex 1 (c)

(2)

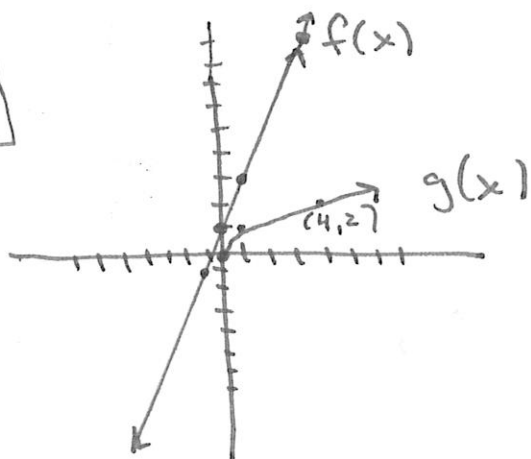
$$\left(\frac{f}{g}\right)(a) = \frac{f(a)}{g(a)}$$

$$f(a) = a^2 + 1 = 1 \quad g(a) = 3(a) + 5 = 5$$

$$\left(\frac{f}{g}\right)(a) = \boxed{\frac{1}{5}}$$

Ex 3

(9)



$$(f+g)(4) =$$

$$f(4) + g(4) =$$

x-value

$$9 + 2 = \boxed{11}$$

(b)

x	f(x)	g(x)
-2	-3	undefined
0	1	0
1	3	1
4	9	2

$$(f+g)(4) =$$

$$f(4) + g(4) =$$

$$9 + 2 = \boxed{11}$$