

2.8

Ex 2c

①

$$f(x) = 8x - 9$$

$$g(x) = \sqrt{2x-1}$$

$$D: (-\infty, \infty)$$

square root

Line

$$\begin{array}{r} 2x - y \geq 0 \\ \hline +1 \quad +1 \end{array}$$

$$\frac{2x}{2} \geq \frac{1}{2}$$

$$x \geq \frac{1}{2}$$

$$D: \left[\frac{1}{2}, \infty\right)$$

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

Domain intersection (overlap) of
f and g domains.

$$D: (f+g)(x) : \left[\frac{1}{2}, \infty\right)$$

2.8 HW

$$\textcircled{\# 73} \quad f(x) = -6x + 9 \quad g(x) = 5x + 7$$

$$\textcircled{a} \quad (f \circ g)(x) = f(g(x))$$

$$\begin{aligned} &= f(5x+7) = -6(5x+7) + 9 \\ &= -30x - 42 + 9 \end{aligned}$$

$$\boxed{(f \circ g)(x) = -30x - 33}$$

2.8

Composition

(2)

$$f(g(x)) \quad x \rightarrow \boxed{g} \rightarrow g(x) \rightarrow \boxed{f} \rightarrow f(g(x))$$

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

Ex 5

$$f(x) = 2x - 1 \quad g(x) = \frac{4}{x-1}$$

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

$$g(2) = \frac{4}{2-1} = \frac{4}{1} = 4 \quad \rightarrow f(4)$$

$$f(4) = 2(4) - 1 = 8 - 1 = 7$$

$$(f \circ g)(2) = \boxed{7}$$

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

$$f(-3) = 2(-3) - 1 = -6 - 1 = \textcircled{-7}$$

$$\rightarrow g(-7)$$

$$g(-7) = \frac{4}{-7-1} = \frac{4}{-8} = -\frac{1}{2}$$

$$(g \circ f)(-3) = \boxed{-\frac{1}{2}}$$