$$f(x) = 4(x) - 3$$

$$f(-2) = 4(-2)$$

$$-8 - 3$$

9.5 (day 2) functions

① How to tell whether is a fn — numerically, graphically, algebraically (solve for y)

② function notation

$f(x) = 3x - 1$ $\quad f(-3)$

$x + y^2 = 2$

$y^2 = -x + 2$ not a fn

② function notation $f(2)$

- Algebraically
- numerically
- graphically

x	$f(x)$
1	7
2	2
3	6
5	2

$f(2) = 2$

$f(3) = 6$

Use the graph of g to solve Exercises 29–34.

29. Find $g(-4)$.

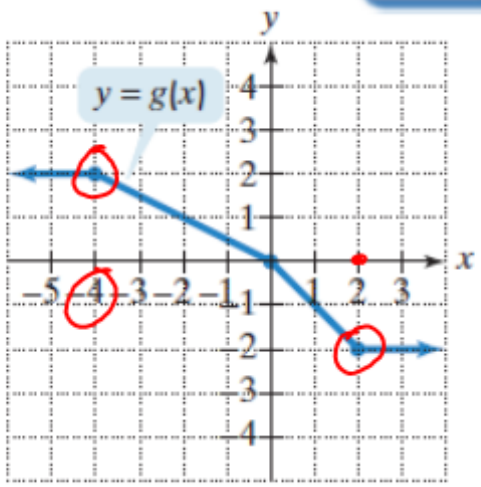
30. Find $g(2)$.

31. Find $g(-10)$.

32. Find $g(10)$.

33. For what value of x is $g(x) = 1$?

34. For what value of x is $g(x) = -1$?



③ graphing

numerically

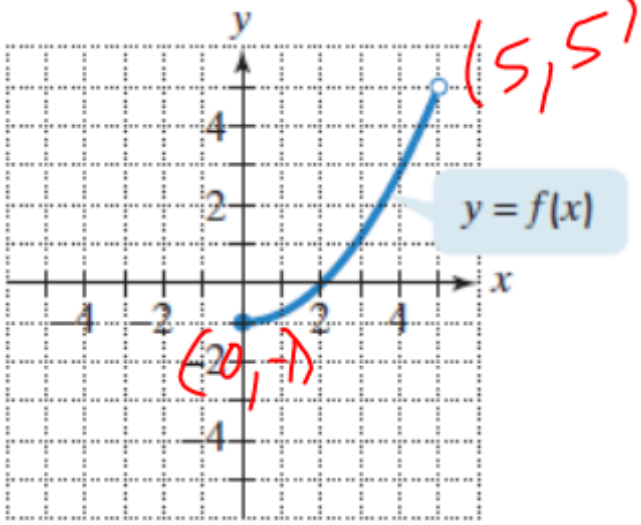
Domain = $\{-3, 0, 1, 2, 5\}$

Range = $\{2, 3, 8\}$

x	$f(x)$
1	8
2	2
-3	3
0	2
5	2

In Exercises 35–38, use the graph of e
domain and its range.

35.



(5, 5)

(0, −1)

L to R

Domain

$[0, 5)$

$\{x \mid 0 \le x < 5\}$

Range

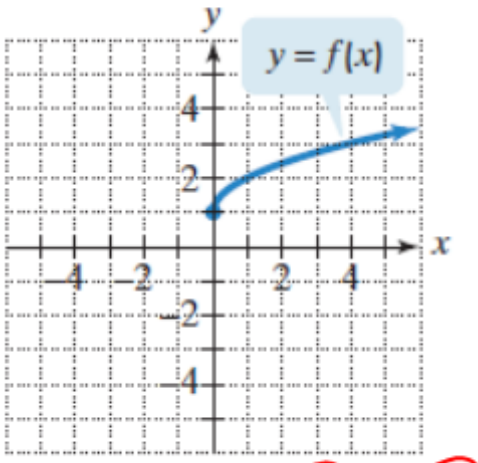
d → u

$[-1, 5)$

$\{y \mid -1 \le y < 5\}$

36.

37.



domain $[0, \infty)$

Range $[1, \infty)$

Algebraically - $f(x) = \frac{x-3}{x+1}$

domain: $\{x \mid x \text{ is a real } \# \text{ but } x \neq -1\}$

interval not $(-\infty, -1) \cup (-1, \infty)$

$$f(x) = \frac{4x-1}{2-3x}$$

$$g(x) = 2x + 5$$

find the domain

$$2 - 3x \neq 0$$

$$-3x \neq -2$$

$$x \neq \frac{2}{3}$$

$$(-\infty, \tfrac{2}{3}) \cup (\tfrac{2}{3}, \infty)$$

domain

$$(-\infty, \infty)$$

(4) Arith. on 2 functions

$f(x) = 4x + 2$

$g(x) = 2x - 5$

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

$= 6x - 3$

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

$9 \qquad 10 + g(-1)$

9

$g(x) = 7x - 3$ $\quad$ $h(x) = 4x - 9$

$(g - h)(2) = g(2) - h(2)$

$= 11 - (-1)$

$= 12$

$$(f \cdot g)(x) = (fg)(x) = f(x) \cdot g(x)$$

~~$f \circ g$~~

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

$f(x) = 3x - 6$

$3(-2) - 6 \rightarrow -6 - 6$

$g(x) = 4x + 1$

$4(-2) + 1 \rightarrow -8 + 1$

$(fg)(-2) = f(-2) \cdot g(-2)$

$-12 \cdot -7$

$+84$

5 Find ① & Interpret ②

$f(x)$ = # people in millions

x = # years after 1980

$f(x) = 7x - 2$

$f(3) = 7(3) - 2 = 19$

In 1983, there were 19 million people

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

x	$f(x)$
-2	5
-1	2
0	1
1	2
2	5