

hw solutions
section 2.1

2. $f(x) = 4x - 3$. Find $f(4)$, $f(\frac{1}{4})$, $f(0)$, $f(a)$, & $f(a+1)$

$$f(4) = 4 \cdot 4 - 3 = 13$$

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

$$f(0) = 4 \cdot 0 - 3 = -3$$

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

$$f(a+1) = 4(a+1) - 3 = 4a + 1$$

19. $f(t) = \frac{1t-1}{t+1}$ & point $(-2, -3)$

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

yes, the point lies on the graph of $f(t)$

36. $f(x) = \frac{\sqrt{x-1}}{(x+2)(x-3)}$

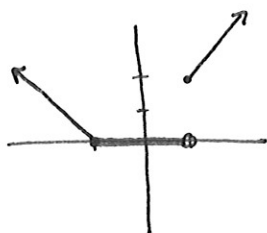
domain is?

$$x \neq -2, 3$$

$$\text{and } x-1 \geq 0 \Rightarrow x \geq 1$$

$$\text{domain: } [1, 3) \cup (3, \infty)$$

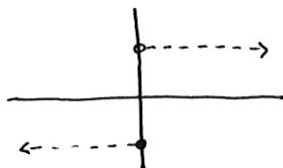
50. sketch the graph of $f(x) = \begin{cases} -x-1, & x < -1 \\ 0, & -1 \leq x \leq 1 \\ x+1, & x > 1 \end{cases}$
& find the domain & range



$$\text{domain: } (-\infty, \infty)$$

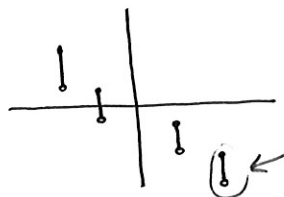
$$\text{range: } [0, \infty)$$

57.



Is a function

58.



not a function

fails the vertical line test

16. see graph page 58

a) $f(7) = 3$

b) find x where $f(x) = 5$
 $x = 4$ & $x = 6$

c) find the x -intercept
 $x = 2$ & $y = 0$

d) domain: $[-1, 9]$ ← the x 's
range: $[-2, 6]$ ← the y 's

21. $f(x) = 2x^2 - 4x + c$; point $(1, 5)$

$$5 = 2(1)^2 - 4(1) + c$$

$$5 = 2 - 4 + c$$

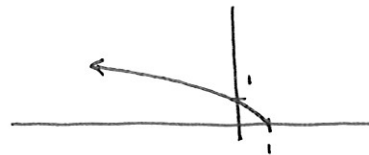
$$5 = -2 + c$$

$$7 = c$$

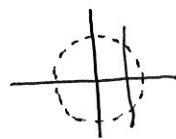
43. sketch the graph of $f(x) = \sqrt{1-x}$
and find the domain & range.

$$\text{domain: } 1-x \geq 0 \Rightarrow x \leq 1 \text{ or } (-\infty, 1]$$

$$\text{range: } y \geq 0 \text{ or } [0, \infty)$$



56.



not a function

fails the vertical line test