

2.1/2.2.0 Interpreting Graphs

A. Discussion

In addition to finding the domain and range of a function, we can ask the additional questions:

1. What is $f(\text{number})$? i.e. $f(3)$, $f(-1)$

Ans: This is the y-value.

To find $f(3)$ say, read the y-value off of the graph when $x=3$.

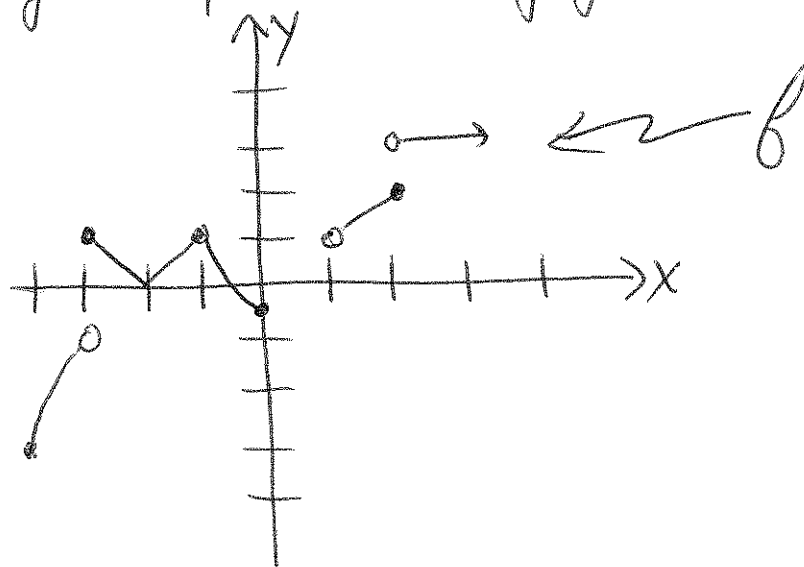
2. Solve the equation $f(x)=0$, for x

Ans: $f(x)=0 \Rightarrow y=0$ (x-axis)

Just answer the question: "Where does the graph cross the x-axis?"

B. Example

Let f be given by the following graph:



Find

a) dom f

b) $\text{rng } f$

c) $f(-3)$

d) $f(2)$

e) Solve $f(x)=0$ for x

Solution

a) scanning across x -axis using vertical lines:

$$\boxed{\text{dom } f = [-4, 0] \cup (1, \infty)}$$

b) scanning across y -axis using horizontal lines

$$\boxed{\text{rng } f = [-3, -1) \cup [-\frac{1}{2}, 2] \cup [3, 3]}$$

c) at $x=-3$, looking up and down, a point is plotted at $y=1$

$$\boxed{1}$$

d) at $x=2$, looking up and down, a point is plotted at $y=2$

$$\boxed{2}$$

e) graph crosses x -axis at $x=-2, -\frac{1}{2}$

$$\boxed{\{-2, -\frac{1}{2}\}}$$

(set, since solving an equation)