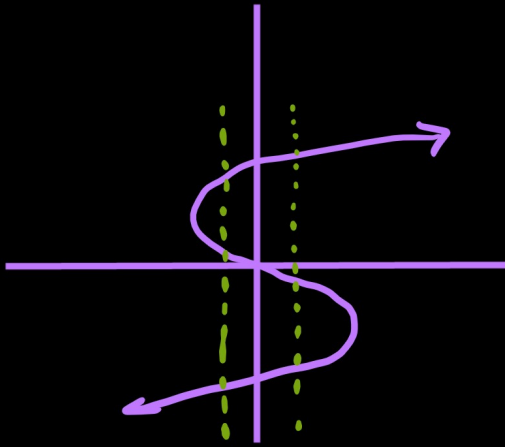
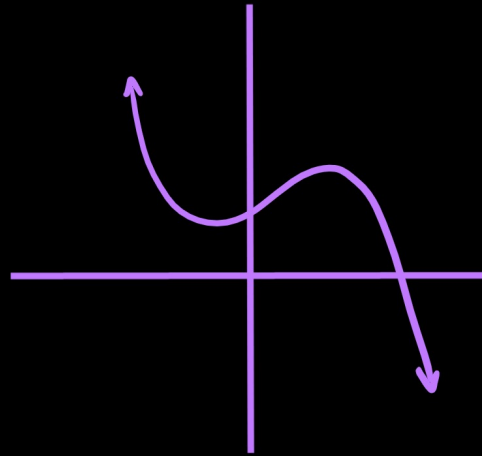


Section 8.2 Graphs of Functions



not a function



is a function

We can use the vertical line test to determine if a graph is that of a function. If there are any vertical lines that pass through the graph more than once, it's not a function.

EXAMPLE 2 Analyzing the Graph of a Function

The human immunodeficiency virus, or HIV, infects and kills helper T cells. Because T cells stimulate the immune system to produce antibodies, their destruction disables the body's defenses against other pathogens. By counting the number of T cells that remain active in the body, the progression of HIV can be monitored. The fewer helper T cells, the more advanced the disease. **Figure 8.8** shows a graph that is used to monitor the average progression of the disease. The number of T cells, $f(x)$, is a function of time after infection, x .

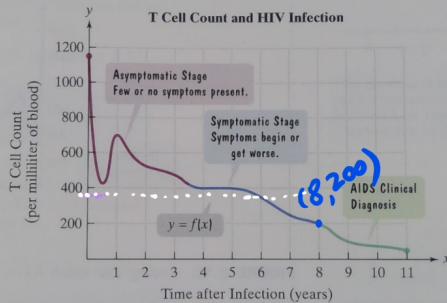


FIGURE 8.8
Source: B.E. Pruitt et al., *Human Sexuality*, Prentice Hall, 2007

- Explain why f represents the graph of a function.
- Use the graph to find $f(8)$. $\rightarrow f(8) = 200$
- For what value of x is $f(x) = 350$? 6
- Describe the general trend shown by the graph.

Interval Notation

() indicate endpoints are not included

[] indicate endpoints are included

Interval

Set-Builder

Number Line

(a, b)

$\{x \mid a < x < b\}$



$[a, b]$

$\{x \mid a \leq x \leq b\}$



$[a, b)$

$\{x \mid a \leq x < b\}$



$(a, b]$

$\{x \mid a < x \leq b\}$



(a, ∞)

$\{x \mid x > a\}$



$[a, \infty)$

$\{x \mid x \geq a\}$



$(-\infty, b)$

$\{x \mid x < b\}$



$(-\infty, b]$

$\{x \mid x \leq b\}$

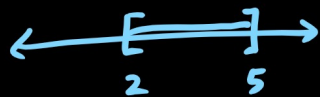
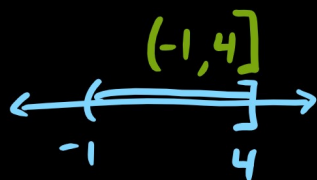


$(-\infty, \infty)$

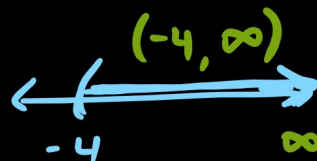
\mathbb{R}



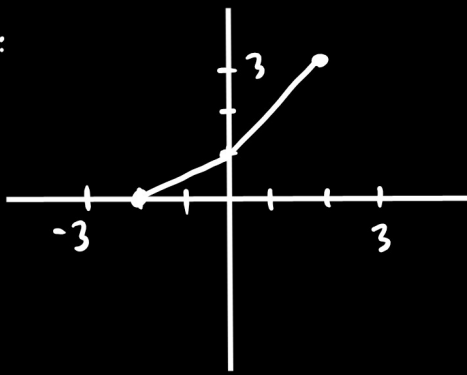
p566 #3



$[2, 5]$



ex:

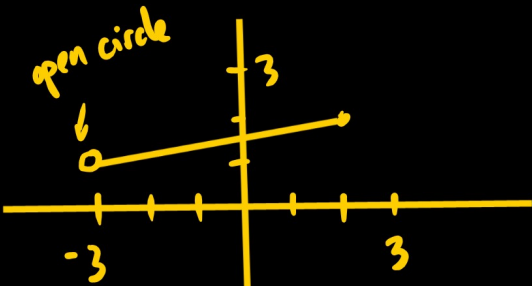


Domain \Rightarrow x-values

$$[-2, 2]$$

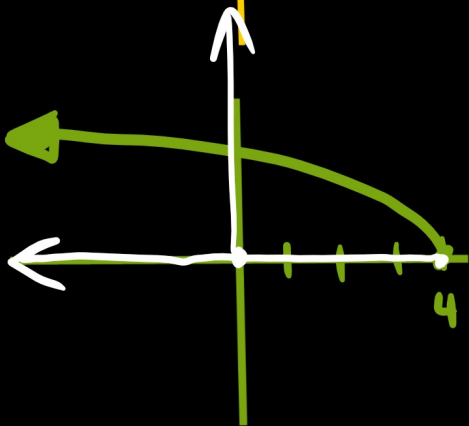
Range \Rightarrow y-values

$$[0, 3]$$



$$D = (-3, 2]$$

$$R = (1, 2]$$



$$D = (-\infty, 4]$$

$$R = [0, \infty)$$

p 569-570
1-41 odd
for 21-33 just
number line