Chapter 2

if $x^2 = y$ then x is a square root of y

the positive square root is called the Principal square root

2 is a square root of 4

-2 is a square root of 4

2 is the principal square root of 4

$\sqrt{4} = 2$

Ex: $\sqrt{16} = 4$

$\sqrt{49} = 7$

Property: $\sqrt{ab} = \sqrt{a}\sqrt{b}$

Ex: $\sqrt{3}\sqrt{300}$

$= \sqrt{900} = \sqrt{9} \cdot \sqrt{100} = 3 \cdot 10 = \boxed{30}$

Ex: $\sqrt{180} + \sqrt{5}$

$= \sqrt{36 \cdot 5} + \sqrt{5}$

$= \sqrt{36}\sqrt{5} + \sqrt{5}$

$= 6\sqrt{5} + \sqrt{5}$

$= \boxed{7\sqrt{5}}$

Negation

if x is positive, then $-x$ is negative.

if x is negative, then $-x$ is positive.

Ex: What is the negative of $2x-3$?

$$-(2x-3) = -2x+3$$
$$= \boxed{3-2x}$$

Ex: Is the number positive or negative?

a) $\pi - 1$

$\pi \approx 3.14$ so $\pi - 1$ is $\boxed{\text{Positive}}$

b) $\sqrt{94} - 11$

$9 = \sqrt{81} < \sqrt{94} < \sqrt{100} = 10$ so $\sqrt{94} - 11$ is $\boxed{\text{negative}}$

Ex: Find the exact value.

a) $-(\pi - 1)$

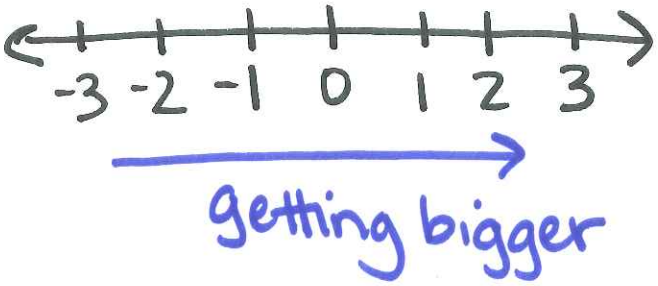
$= -\pi + 1 = \boxed{1-\pi}$

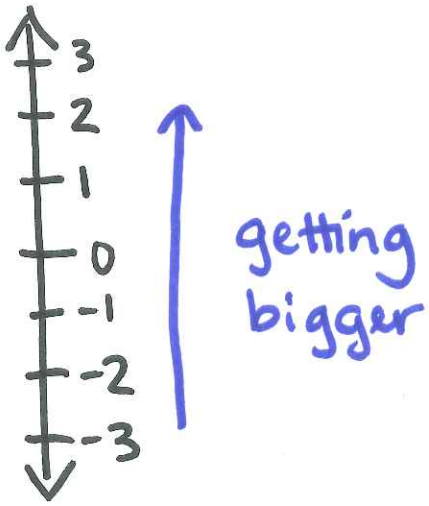
b) $-(\sqrt{94} - 11)$

$= -\sqrt{94} + 11 = \boxed{11-\sqrt{94}}$

Chapter 3

Number lines – usually horizontal or vertical

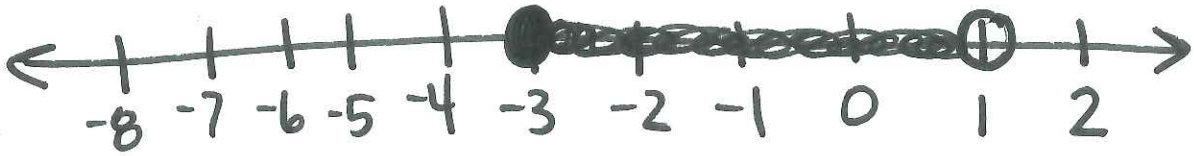




"shaded/solid/closed" points • or brackets [ ] mean we include that number.

"unshaded/open" point o or parentheses ( ) mean we don't include that number.

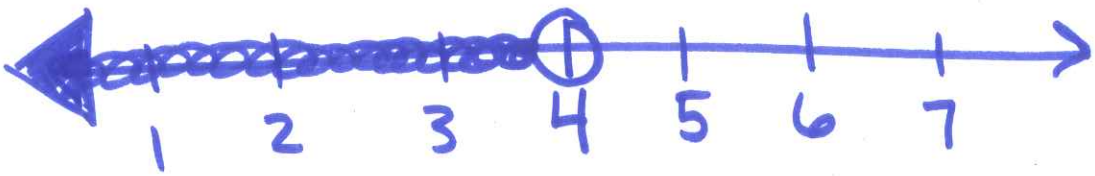
Ex: Find the interval that corresponds to the graph.



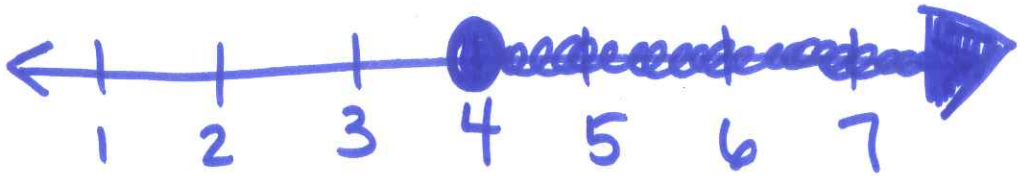
$[-3, 1)$

Ex: Graph the following intervals on a number line

a) $(-\infty, 4)$

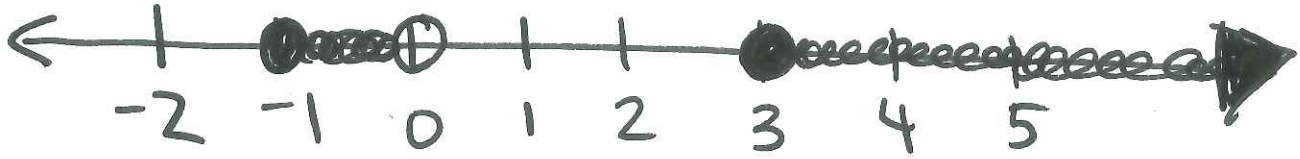


b) $[4, \infty)$

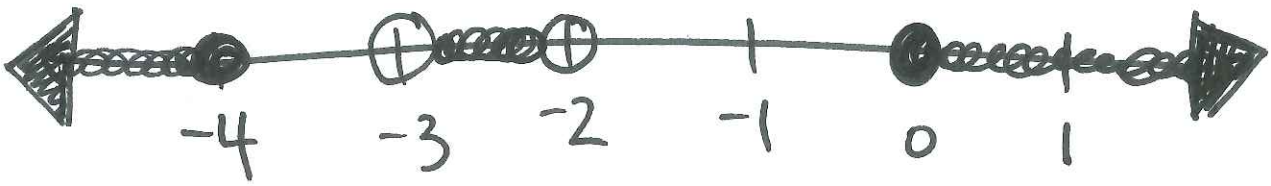


We use the union operator $\cup$ when we have multiple intervals that a value could be in.

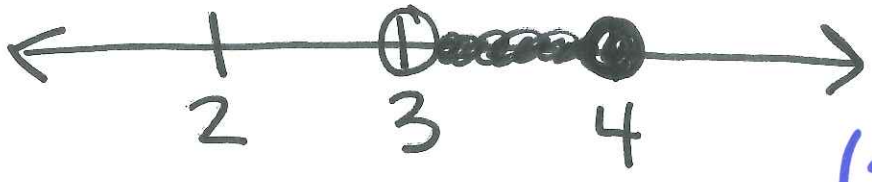
Ex: What interval notation corresponds to the graph?

a) 

$[-1, 0) \cup [3, \infty)$

b) 

$(-\infty, -4] \cup (-3, -2) \cup [0, \infty)$

c) 

$(3, 4]$