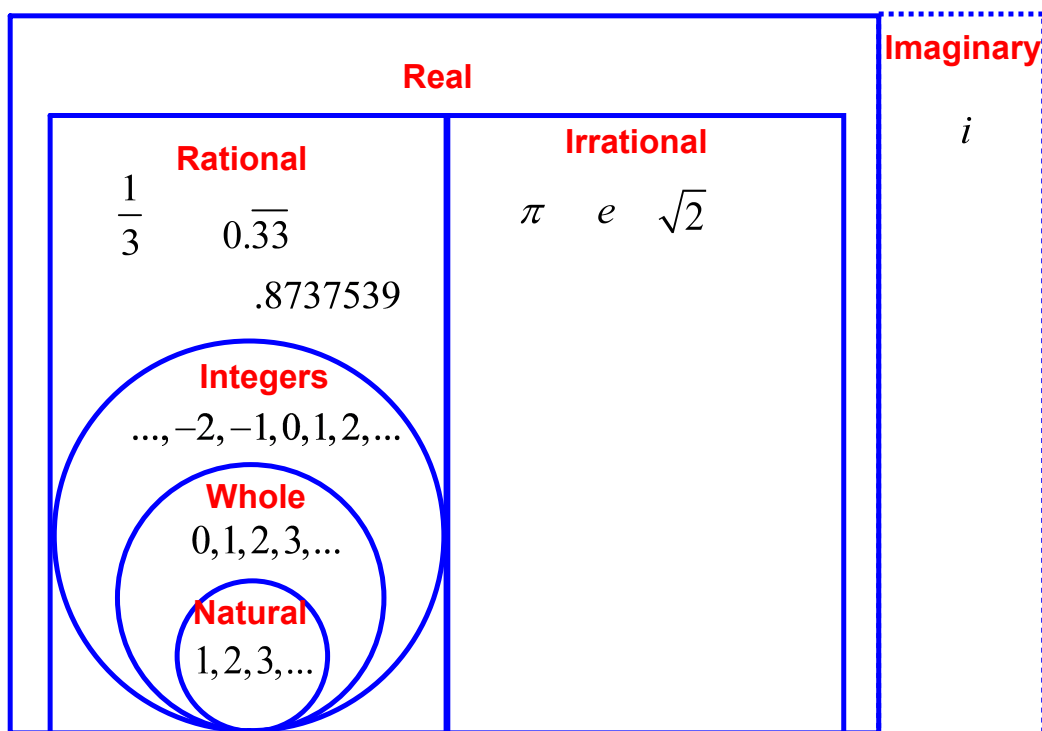


1.1 Apply Properties of Real Numbers

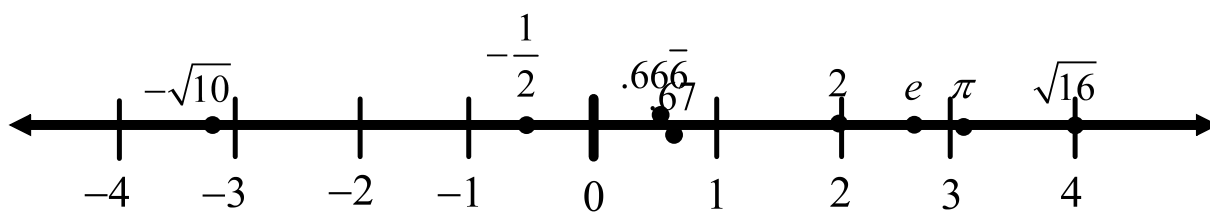
Sets of Numbers

Examples



EXAMPLE 1 Graph real numbers on a number line

Graph the real numbers on a number line.



<u>Property</u>	<u>Addition</u>	<u>Multiplication</u>
Closure	$a+b$ is a real #	$a \cdot b$ is a real #
Commutative	$a+b = b+a$	$a \cdot b = b \cdot a$
Associative	$a+(b+c) = (a+b)+c$	$a \cdot (b \cdot c) = (a \cdot b) \cdot c$
Identity	$a + \underline{0} = a$	$a \cdot \underline{1} = a$
Inverse	$a + \underline{(-a)} = 0$	$a \cdot \underline{\frac{1}{a}} = 1$
Distributive	$a(b+c) = ab+ac$	

EXAMPLE 3 Identify properties of real numbers

Identify the property that the statement illustrates.

Equation	Property
$3+4+(5+6) = (3+4)+5+6$	Assoc.
$3+4+(5+6) = (6+5)+4+3$	Comm.
$3+4-(5+6) = 3+4-5-6$	Dist.

EXAMPLE 5 Use unit analysis with operations

- a. You work 4 hours and earn \$36. What is your earning rate?

$$\frac{\cancel{\$}}{\cancel{\text{hr}}} \rightarrow \frac{\$36}{4\text{hr}} = \boxed{\$9 \text{ per hour}}$$

- b. You travel for 2.5 hours at 50 miles per hour. How far do you go?

$$\text{mph} = \frac{\text{miles}}{\text{hours}} \rightarrow 50 = \frac{m}{2.5}$$

$$m = 2.5 \cdot 50 = \boxed{125 \text{ miles}}$$

- c. You drive 45 miles per hour. What is your speed in feet per second?

$$\frac{45\cancel{\text{mi}}}{1\cancel{\text{hour}}} \cdot \frac{5280\text{ft}}{1\cancel{\text{mi}}} \cdot \frac{1\cancel{\text{hour}}}{3600\text{sec}} = \frac{45 \cdot 5280}{3600} \text{ft/sec} = \boxed{66 \text{ft/sec}}$$

EXAMPLE 6 Use unit analysis with conversions

Perform the indicated conversion.

(You may need to use page 1025 in the back of your textbook)

150 yards to feet

$$\frac{150 \cancel{\text{yds}}}{1 \cancel{\text{yd}}} \cdot \frac{3 \text{ft}}{1} = 150 \cdot 3 \text{ft} = \boxed{450 \text{ft}}$$

16 years to seconds

$$\frac{16 \cancel{\text{years}}}{1 \cancel{\text{years}}} \cdot \frac{365 \cancel{\text{days}}}{1 \cancel{\text{days}}} \cdot \frac{24 \cancel{\text{hours}}}{1 \cancel{\text{hours}}} \cdot \frac{3600 \text{sec}}{1 \cancel{\text{hours}}} = \boxed{504,576,000 \text{ sec}}$$