

Real Numbers and Simplifying Variable Expressions

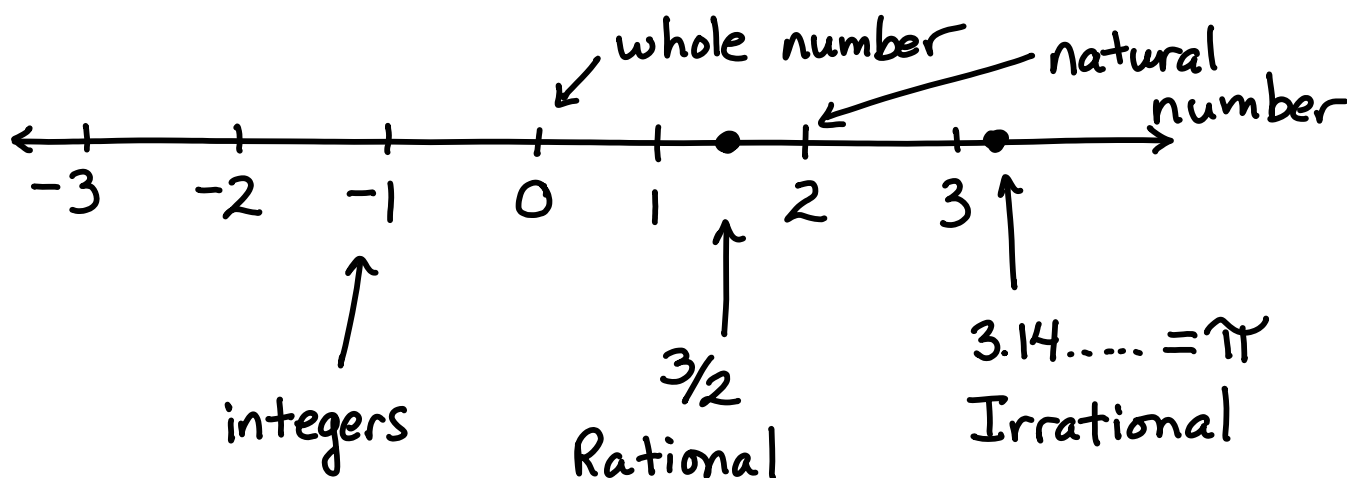


Chapter Review



Real Number System

- numbers on the "Real" number line



- Real numbers can express everyday concepts

$-\$10^{00}$ ten dollars of debt

$+87.5$ ft. 87.5 feet above ground



Adding and Subtracting Real Numbers

$$-6 + -2 \quad \text{same sign, add keep sign} = -8$$

$$10 - 13 \quad \text{turn subtraction into "plus-negative",}$$

$$10 + -13 \quad \text{subtract, keep sign of the}$$
$$= -3 \quad \text{number with greatest absolute value}$$

Negative of a negative = positive

$$\underline{-(-7)} + -5 = \quad 7 + -5 = 2$$

subtract, keep sign of the
number with greatest absolute value



Multiplying and Dividing Real Numbers

$$2 \cdot -5 = \quad + \text{ times } - = \text{negative}$$

$$-3 \cdot -10 = \quad - \text{ times } - = \text{positive}$$

$$12 \div -4 = \quad + \text{ divided by } - = \text{negative}$$

$$\frac{-40}{-10} = \quad - \text{ divided by } - = \text{positive}$$



Distributive Property

$$2(3 + 1) = 2(3) + 2(1) = 6 + 2 = 8$$

$$6(x - 2) = 6(x) + 6(-2) = 6x - 12$$

$$-3(4x - 1) = -3(4x) + -3(-1) = -12x + 3$$



Simplifying by Combining Like Terms

$$\underline{4x} + \underline{2x} = 6x$$

Like terms = same variable - same power
(can add)

$$\underline{4x^2} + \underline{2x} = 4x^2 + 2x$$

NOT Like terms = same variable - different powers!
(can NOT add)

$$2(x + 3) + 4(x - 1) = 2x + 6 + 4x - 4$$

Distribute first, add any like terms

$$= \underline{2x} + \underline{4x} + \underline{6} + \underline{-4}$$

$$= 6x + 2$$