

1.5 SOLVING EQUATIONS/INEQUALITIES WITH LIMITED DOMAIN

OBJECTIVES:

- 1) Solve inequalities and equations with a limited domain.

EQUATIONS WITH LIMITED DOMAIN

Directions: Solve the equation within the specified domain.

1) $3(x-6) = 5(x+2)$

$$3x - 18 = 5x + 10$$

$$-2x = 28$$

$$x = -14$$

a) $\{-14\}$

b) $\{-14\}$

c) $\{3\} \neq \emptyset$

a) {reals}

b) {integers}

c) {positive reals}

2) $-3x^2 = -36$

$$x^2 = 12$$

$$x = \pm 2\sqrt{3}$$

a) $\{\pm 2\sqrt{3}\}$

b) $\{3\}$ or \emptyset

c) $\{-2\sqrt{3}\}$

a) {reals}

b) {rational}

c) {negative non-integers}

3) $x^2 - 3x - 18 = 0$

$$(x-6)(x+3) = 0$$

$$x = 6 \quad x = -3$$

a) $\{-6, -3\}$

b) $\{3\}$ or \emptyset

c) $\{6\}$

a) {reals}

b) {irrational}

c) {non-negative integers}

4) $2x^2 + x - 15 = 0$

p: -30
s: 1

$$2x^2 + 6x - 5x - 15 = 0$$

$$2x(x+3) - 5(x+3) = 0$$

$$(2x-5)(x+3) = 0$$

$$x = \frac{5}{2}, -3$$

a) $\{\frac{5}{2}, -3\}$

b) $\{\frac{5}{2}, -3\}$

c) $\{-3\}$

a) {reals}

b) {rational}

c) {integers}

INEQUALITIES WITH LIMITED DOMAIN

Directions: Solve and graph with respect to the given domain.

5) $3x + 6 > 3$

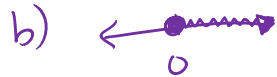
$3x > -3$

$x > -1$



a) {reals}

b) {non-negative reals}



remember, only solutions that are "non-negative" are within the domain.

6) $3x + 9 \leq 5(x + 2)$

$3x + 9 \leq 5x + 10$

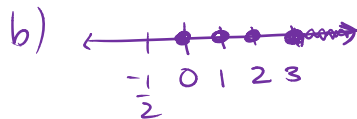
$-2x \leq 1$

$x \geq -\frac{1}{2}$



a) {reals}

b) {integers}



7) $-6 \leq \frac{1}{2}x - 3 < 0$

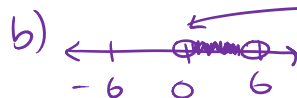
$-3 \leq \frac{1}{2}x < 3$

$-6 \leq x < 6$



c) {reals}

d) {positive reals}



open circle b/c 0 is not positive.
 (it is neither negative or positive)

this portion of our solution represents negative reals