1.6 ABSOLUTE VALUE EQUATIONS/INEQUALITIES WITH LIMITED DOMAIN

OBJECTIVES:

1) Solve absolute value equations and inequalities with a limited domain.

EQUATIONS WITH LIMITED DOMAIN

Directions: Solve the equation within the specified domain.

1) $|x + 2| = 6$

$x + 2 = 6 \qquad x + 2 = -6$

$x = 4 \qquad\quad x = -8$

a) $\{4, -8\}$

b) $\{4\}$

a) {reals}
b) {positive integers}

2) $2|x - 7| + 6 = 10$

$|x - 7| = 2$

$x - 7 = 2 \qquad x - 7 = -2$

$x = 9 \qquad\quad x = 5$

a) $\{5, 9\}$

b) $\{5, 9\}$

a) {reals}
b) {rational}

INEQUALITIES WITH LIMITED DOMAIN

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

3) $|x - 4| < 6$ ← Less thAND
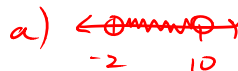
$x - 4 < 6 \quad$ AND $\quad x - 4 > -6$

$x < 10 \qquad\qquad\quad x > -2$

$\{-2 < x < 10\}$

a)

b) $\{0,1,2,3,4,5,6,7,8,9\}$
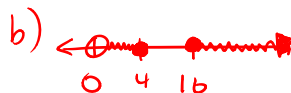
a) {reals}
b) {non-negative integers}

4) $3|x - 10| \geq 18$ ← GreatOR

$|x - 10| \geq 6$

$x - 10 \geq 6 \qquad x - 10 \leq -6$

$x \geq 16 \quad$ or $\quad x \leq 4$

a)

b)

a) {reals}
b) {positive reals}