

## §1.6 Equations and Inequalities with Absolute Value

### Solving Equations Involving Absolute value: Theorem

if  $a$  is a positive real number and if  $u$  is any algebraic expression, then

$|u| = a$  is equivalent to

$$u = a \quad \text{or} \quad u = -a$$

Example      Solve.

a.)  $|x + 4| = 13$

b.)  $|2x - 3| + 2 = 7$

# Solving Inequalities Involving Absolute value: Theorem

Examples      Solve.

a.)  $|x| < 4$

b.)  $|x| \geq 4$

if  $a$  is a positive real number and if  $u$  is any algebraic expression, then

(1)  $|u| < a$  is equivalent to  $-a < u < a$

(2)  $|u| > a$  is equivalent to  $u < -a$  or  $u > a$

Note: You may see  $<$  or  $\leq$ . You may see  $>$  or  $\geq$ .

Examples      Solve.

a.)  $|2x + 4| \leq 3$

b.)  $|1 - 4x| < 5$

$$\text{c.) } |2x - 5| > 3$$