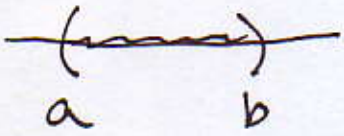
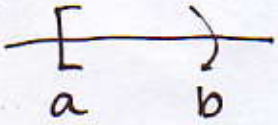
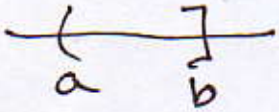
## BOUNDED INTERVALS

| INTERVAL NOTATION | TYPE | INEQUALITY | GRAPH |
|---|---|---|---|
| $[a,b]$ | CLOSED | $a \leq x \leq b$ |   |
| $(a,b)$ | OPEN | $a < x < b$ |   |
| $[a,b)$ | HALF-OPEN | $a \leq x < b$ |   |
| $(a,b]$ | HALF-OPEN | $a < x \leq b$ |   |

## UNBOUNDED INTERVALS

| | | | |
|---|---|---|---|
| $[a,\infty)$ | HALF-OPEN | $x \geq a$ |   |
| $(a,\infty)$ | OPEN | $x > a$ |   |
| $(-\infty,b]$ | HALF-OPEN | $x \leq b$ |   |
| $(-\infty,b)$ | OPEN | $x < b$ |   |
| $(-\infty,\infty)$ | ENTIRE REAL LINE | ALL REAL $\mathbb{R}$ |  |

SEC 1.6

23. $4 - 3x \leq -(1 + 8x)$

$4 - 3x \leq -1 - 8x$

$+8x \qquad +8x$

$4 + 5x \leq -1$

$-4 \qquad -4$

$\frac{5x}{5} \leq \frac{-5}{5}$

$x \leq -1 \qquad (-\infty, -1]$

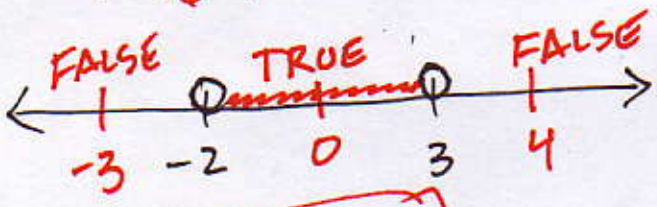
33. $(x+2)(x-3) < 0$ ZEROS: $-2, 3$

$(2)(-3)$

$-6 < 0$

$6 \cdot 1 < 0$

$6$




TEST SOME #'s

$(-2, 3)$

$-2 < x < 3$

# SEC 1.7 ABSOLUTE VALUE EQUATIONS & INEQUALITIES

1. ABSOLUTE VALUE: THE POSITIVE DISTANCE FROM ZERO.

$|x| = 5$

5 OR -5

$|-5| = 5$

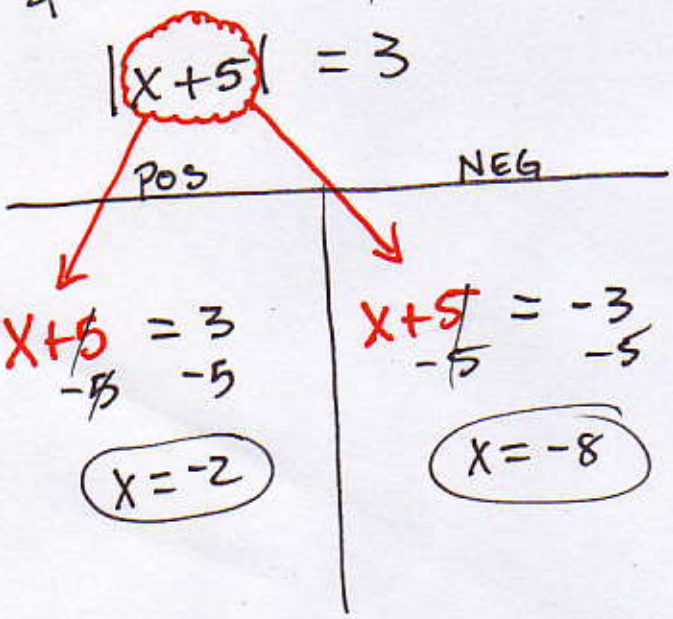
$|5| = 5$

13. $3|x+5| + 6 = 15$

$-6 \quad -6$

$\frac{3}{3}|x+5| = \frac{9}{3}$

$|x+5| = 3$




$x+5 = 3$

$-5 \quad -5$

$x = -2$

$x+5 = -3$

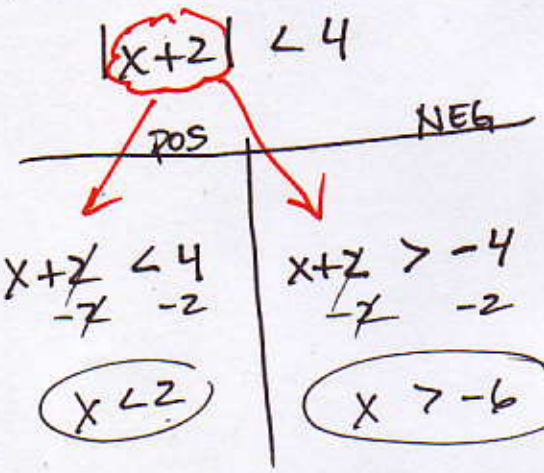
$-5 \quad -5$

$x = -8$

35. $4|x+2| - 3 < 13$
$+3 \quad +3$

$\frac{4}{4}|x+2| < \frac{16}{4}$

$|x+2| < 4$





$(-6, 2)$