

$$|x+3| + |4-x| = |8+x|$$

$$\boxed{\begin{array}{l} |x| = x \quad x \geq 0 \\ \quad \quad -x \quad x < 0 \end{array}}$$



$$\begin{array}{lll} |x+3| = & x+3 & x+3 \geq 0 \quad x \geq -3 \\ & -(x+3) & x+3 < 0 \quad x < -3 \end{array}$$

$$|\cancel{4-x}| = \cancel{4-x} =$$

$$|4-x| = |x-4|$$

$$\begin{array}{lll} |x-4| = & x-4 & x-4 \geq 0 \quad x \geq 4 \\ & -(x-4) & x-4 < 0 \quad x < 4 \end{array}$$

$$\begin{array}{lll} |x+8| = & (x+8) & x+8 \geq 0 \quad x \geq -8 \\ & -(x+8) & x+8 < 0 \quad x < -8 \end{array}$$

case 1 $\rightarrow x < -8$

case 2 $\rightarrow -8 \leq x < -3$

case 3 $\rightarrow -3 \leq x < 4$

case 4 $\rightarrow x \geq 4$

