

COLLEGE ALGEBRA

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GPS # 23

2.8 ADDITIONAL EQUATIONS AND INEQUALITIES

Class Time: 11:30

Date: 8-21-08

Useful Guidelines:

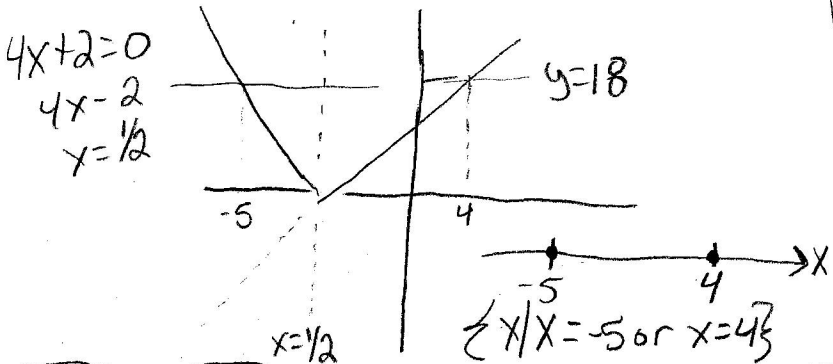
* To solve absolute value equations and inequalities:

- 1) $|ax+b|=k$: solve the compound equation $ax+b=k$ or $ax+b=-k$
- 2) $|ax+b|>k$: solve the compound inequality $ax+b>k$ or $ax+b<-k$
- 3) $|ax+b|<k$: solve the compound inequality $-k<ax+b<k$

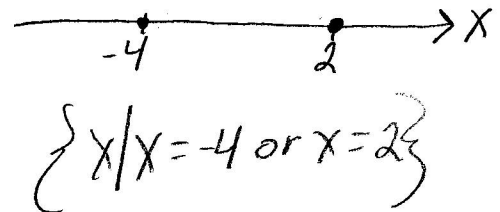
*try graph
no prob!*

Solve the following absolute value equations and inequalities. Give the solution set in set notation for equations and in interval notation for inequalities. Graph the solution set.

1. a) $|4x+2|=18$ $4x=16$ $x=4$ or $4x=-20$ $x=-5$
 $4x+2=18$ or $4x+2=-18$

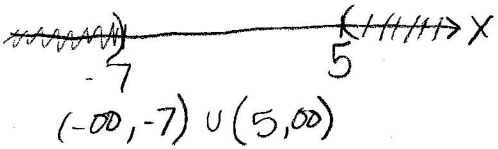


b) $|3x+3|+6=15$ $|3x+3|=9$
 $3x+3=9$ or $3x+3=-9$
 $3x=6$ or $3x=-12$
 $x=2$ or $x=-4$



2. a) $|x+1|>6$

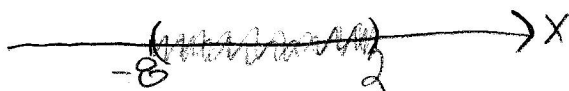
$x+1>6$ or $x+1<-6$
 $x>5$ or $x<-7$



$\{x | x > 5 \text{ or } x < -7\}$

3. a) $|2x+6|<10$

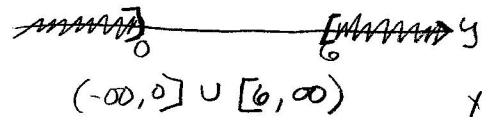
$2x+6<10$ and $2x+6>-10$
 $2x<4$ and $2x>-16$
 $x<2$ and $x>-8$



$\{x | x < 2 \text{ and } x > -8\}$
 or $\{x | -8 < x < 2\}$

b) $|3-y|+3 \geq 6$

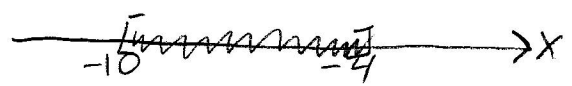
$|3-y| \geq 3$
 $3-y \geq 3$ or $3-y \leq -3$
 $-y \geq 0$ or $-y \leq -6$
 $\frac{-y}{-1} \geq \frac{0}{-1}$ or $\frac{-y}{-1} \leq \frac{-6}{-1}$
 $y \leq 0$ or $y \geq 6$



$\{y | y \leq 0 \text{ or } y \geq 6\}$

b) $|x+7| \leq 3$

$x+7 \leq 3$ and $x+7 \geq -3$
 $x \leq -4$ and $x \geq -10$



$\{x | -10 \leq x \leq -4\}$

