Linearne nejednačine sa apsolutnim vrijednostima

1) $3-|2x-1|\geq 1$

Rješenje:

x	$-\infty$ $\frac{1}{2}$ $+\infty$	
2x-1	----------0+++++++++++++++++++++++++++++++	
	$3+2x-1\geq 1\Leftrightarrow 2x+2\geq 1$ $2x\geq -1\Leftrightarrow x\geq -\frac{1}{2}\Rightarrow x\in\left[-\frac{1}{2},\frac{1}{2}\right)$	$3-2x+1\geq 1\Leftrightarrow -2x+4\geq 1$ $-2x\geq -3\Leftrightarrow x\leq \frac{3}{2}\Rightarrow x\in\left[\frac{1}{2},\frac{3}{2}\right]$

Prema tome rješenje je: $x\in\left[-\frac{1}{2},\frac{3}{2}\right]$

2) $3x+|1-x|\leq 3(1-x)$

Rješenje:

x	$-\infty$ 1 $+\infty$	
1-x	+++++++++++++++++++++++++++++0----------	
	$3x+1-x\leq 3(1-x)\Leftrightarrow 2x+1\leq 3-3x$ $5x\leq 2\Leftrightarrow x\leq \frac{2}{5}\Rightarrow x\in\left(-\infty,\frac{2}{5}\right]$	$3x-1+x\leq 3(1-x)\Leftrightarrow 4x-1\leq 3-3x$ $7x\leq 4\Leftrightarrow x\leq \frac{4}{7}\Rightarrow x\in\Phi$

Prema tome rješenje je: $x\in\left(-\infty,\frac{2}{5}\right]$

3) $|x+2|-|x-2|>1$

Rješenje:

x	$-\infty$ -2 +2 $+\infty$		
x+2	----------0+++++++++++++++++++++++++++++++++++++		
x-2	--0+++++++++++++++++		
	$-x-2+x-2>1$ $-4>1$ $x\in\Phi$	$x+2+x-2>1$ $2x>1$ $x>\frac{1}{2}\Rightarrow x\in\left(\frac{1}{2},2\right)$	$x+2-x+2>1$ $4>1$ $x\in[2,+\infty)$

Prema tome rješenje je: $x\in\left(\frac{1}{2},+\infty\right)$

4) $|x|-|x-2|>1+2x$

Rješenje:

x	$-\infty$	0	+2	$+\infty$
x	----------0+++++++++++++++++++++++++++++++++++++++			
x-2	----------0+++++++++++++++++			
	$-x+x-2>1+2x$ $2x<-1\Rightarrow x<-\frac{1}{2}\Rightarrow x\in\left(-\infty,-\frac{1}{2}\right)$	$x+x-2>1+2x$ $-2>1$ $x\in\Phi$	$x-x+2>1+2x$ $2x<1$ $x\in\Phi$	

Prema tome rješenje je: $x\in\left(-\infty,-\frac{1}{2}\right)$

5) $\frac{|3x-4|}{|x-1|}\le 2$

Rješenje:Za x≠1 nejednadžba se smije pomnožiti sa $|x-1|$ pa imamo: $|3x-4|\le 2|x-1|$

x	$-\infty$	1	$\frac{4}{3}$	$+\infty$
x-1	----------0+++++++++++++++++++++++++++++++++++++++			
3x-4	----------0+++++++++++++++++++			
	$-3x+4\le -2x+2$ $-x\le -2\Rightarrow x\ge 2\Rightarrow x\in\Phi$	$-3x+4\le 2x-2$ $-5x\le -6\Rightarrow x\ge\frac{6}{5}\Rightarrow x\in\left[\frac{6}{5},\frac{4}{3}\right)$	$3x-4\le 2x-2$ $x\le 2\Rightarrow x\in\left[\frac{4}{3},2\right]$	

Prema tome rješenje je: $x\in\left[\frac{6}{5},2\right]$

6) $|x-1|-|x-2|+|x-3|<3$

Rješenje:

x	$-\infty$	+1	+2	+3	$+\infty$
x-1	----------0+++++++++++++++++++++++++++++++++++++++				
x-2	---------- 0+++++++++++++++++++++++++++++++				
x-3	---------- 0+++++++++++++++				
	$-x+1+x-2-x+3<3$ $-x<1\Rightarrow x>-1$ $x\in(-1,1)$	$x-1+x-2-x+3<3$ $x<3\Rightarrow$ $x\in[1,2)$	$x-1-x+2-x+3<3$ $-x<-1\Rightarrow x>1$ $x\in[2,3)$	$x-1-x+2+x-3<3$ $x<5$ $x\in[3,5)$	

Prema tome rješenje je: $x\in(-1,5)$

******moguće su štamparske greške******