

4.6A Absolute Value Inequalities

$|f(x)| < k$  means:  $f(x) < k$  **and**  $f(x) > -k$

$|f(x)| > k$  means:  $f(x) > k$  **or**  $f(x) < -k$

Less Than --> "and"

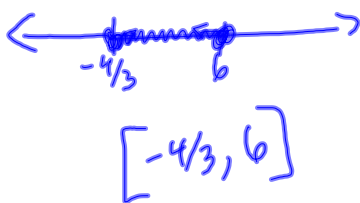
$< , \leq$

Greater --> "or"

$> , \geq$

ex)  $|3x-7| \leq 11$

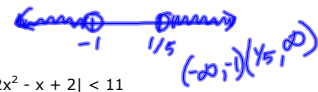
$$\begin{aligned} 3x-7 &\leq 11 && \& \quad 3x-7 \geq -11 \\ 3x &\leq 18 && \& \quad 3x \geq -4 \\ x &\leq 6 && \& \quad x \geq -4/3 \end{aligned}$$



Dec 2-5:55 PM

ex)  $|5x+2| > 3$

$$\begin{aligned} 5x+2 &> 3 && \text{or} && 5x+2 < -3 \\ 5x &> 1 && && 5x < -5 \\ x &> 1/5 && \text{or} && x < -1 \end{aligned}$$

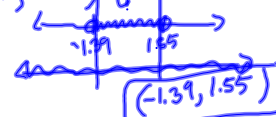


ex)  $|x^4+2x^2-x+2| < 11$

$$x^4+2x^2-x+2 < 11 \quad \& \quad x^4+2x^2-x+2 > -11$$

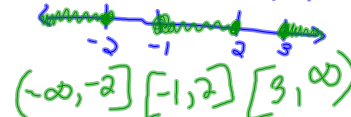
$$x^4+2x^2-x-9 < 0 \quad \& \quad x^4+2x^2-x+13 > 0$$

$$(-1.39, 1.55) \quad \& \quad (-\infty, \infty)$$



ex)  $|x^2-x-4| \geq 2$

$$\begin{aligned} x^2-x-4 &\geq 2 && \text{or} && x^2-x-4 \leq -2 \\ x^2-x-6 &\geq 0 && && x^2-x-2 \leq 0 \\ (x-3)(x+2) &&& && (x-2)(x+1) \\ \leq, -2 &&& && 2, -1 \end{aligned}$$



Dec 2-6:00 PM

- p 281 # 2-10e, 18, 22-28e
- p 281 # 2-10e, 18, 22-28e
- p 281 # 2-10e, 18, 22-28e
- p 281 # 2-10e, 18, 22-28e
- p 281 # 2-10e, 18, 22-28e
- p 281 # 2-10e, 18, 22-28e
- p 281 # 2-10e, 18, 22-28e
- p 281 # 2-10e, 18, 22-28e
- p 281 # 2-10e, 18, 22-28e
- p 281 # 2-10e, 18, 22-28e
- p 281 # 2-10e, 18, 22-28e
- p 281 # 2-10e, 18, 22-28e
- p 281 # 2-10e, 18, 22-28e
- p 281 # 2-10e, 18, 22-28e
- p 281 # 2-10e, 18, 22-28e
- p 281 # 2-10e, 18, 22-28e
- p 281 # 2-10e, 18, 22-28e
- p 281 # 2-10e, 18, 22-28e
- p 281 # 2-10e, 18, 22-28e

Dec 2-6:02 PM