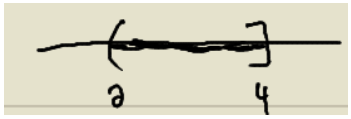
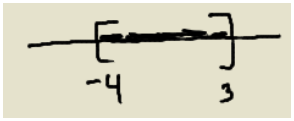
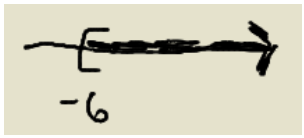
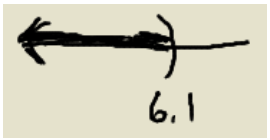
Homework: Linear Inequalities and Absolute Value Inequalities - Key

In Problems 1-4, express each interval in set-builder notation and graph the interval on a number line

1. $\{x \mid 2 < x \le 4\}$ 	2. $\{x \mid -4 \le x \le 3\}$ 
3. $\{x \mid x \ge -6\}$ 	4. $\{x \mid x < 6.1\}$ 

In Problems 5-7, Use graphs to find each set.

5. $(-5,4]$	6. $(-\infty,5)$
7. $[2,5)$	

In Problems 8-13, solve each linear inequality. Use interval notation to express solution sets

8. $x \ge \frac{11}{5}$ $\left[\frac{11}{5},\infty\right)$	9. $x \le \frac{4}{5}$ $\left(-\infty,\frac{4}{5}\right]$
10. $x < \frac{-1}{2}$ $\left(-\infty,\frac{-1}{2}\right)$	11. $x \ge \frac{-35}{3}$ $\left[\frac{-35}{3},\infty\right)$

12.	13. No solution
$x \geq \frac{-1}{2}$ $\left[\frac{-1}{2}, \infty\right)$	

In Problems 14-15, solve each compound inequality. Use interval notation to express solution sets

14.	15.
$-2 \leq x < 5$ $[-2,5)$	$0 \leq x < \frac{-5}{2}$ $\left[0, \frac{-5}{2}\right)$

In Problems 16-24, solve each absolute value inequality. Use interval notation to express solution sets

16.	17.
$-3 \leq x \leq 9$ $[-3,9]$	$\frac{-4}{3} \leq x \leq \frac{14}{3}$ $\left[\frac{-4}{3}, \frac{14}{3}\right]$
18.	19.
$x < -5 \quad or \quad x > 5$ $(-\infty,-5) \cup (5,\infty)$	$x < \frac{-8}{5} \quad or \quad x > 2$ $\left(-\infty, \frac{-8}{5}\right) \cup (2,\infty)$
20.	21.
$x < 5 \quad or \quad x > 15$ $(-\infty,5) \cup (15,\infty)$	$2 \leq x \leq 8$ $[2,8]$

22. $x \le \frac{-2}{3} \quad or \quad x \ge 4$ $\left(-\infty, \frac{-2}{3}\right] \cup [4, \infty)$	23. $x < \frac{3}{2} \quad or \quad x > \frac{7}{2}$ $\left(-\infty, \frac{3}{2}\right) \cup \left(\frac{7}{2}, \infty\right)$
24. $x \le -4 \quad or \quad x \ge 36$ $(-\infty, -4] \cup [36, \infty)$	