

# The Weekly Rigor

No. 298

“A mathematician is a machine for turning coffee into theorems.”

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## 10 Problems in Solving Inequalities Involving Absolute Value

### PROBLEMS

Solve each inequality and express the solution set using interval notation.

1.  $|x| < 1$ .

2.  $|x| \leq 4$ .

3.  $|x + 1| < 8$ .

4.  $|x - 3| < 9$ .

5.  $|x| > 1$ .

6.  $|x| \geq 4$ .

7.  $|x + 1| > 8.$

8.  $|x - 3| > 9.$

9.  $\left|\frac{x}{2} + \frac{1}{3}\right| < 4.$

10.  $\left|\frac{x}{2} + \frac{3}{4}\right| \geq 5.$

## ANSWERS

1. $(-1,1)$	2. $[-4,4]$
3. $(-9,7)$	4. $(-6,12)$
5. $(-\infty, -1) \cup (1, \infty)$	6. $(-\infty, -4] \cup [4, \infty)$
7. $(-\infty, -9) \cup (7, \infty)$	8. $(-\infty, -6) \cup (12, \infty)$
9. $\left(-\frac{26}{3}, \frac{22}{3}\right)$	10. $\left(-\infty, -\frac{23}{2}\right] \cup \left[\frac{17}{2}, \infty\right)$

“Only he who never plays, never loses.”