# Test Review Sections 3.4 & 3.5

Section 1: Solve and graph the solution of the following inequalities.

1. $|2x + 3| < 7$

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| Step 1: Isolate the absolute value if needed |
| Step 2: Set up the Positive and Negative versions |
| Step 3: Solve each version and graph. If<br>1. $>$ or $\geq$ use unions, $\cup$, to connect intervals<br>2. $<$ or $\leq$ the solution interval is where they overlap |

2. $x^2 - 2x - 15 < 0$

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| Step 1: Get a quadratic on one side of the inequality and a zero on the other. |
| Step 2: Find the solutions of the quadratic by solving through factoring, quadratic formula, or completing the square. |
| Step 3: Plot the solutions on a number line. This "breaks up" the number line into interval Use test points from those intervals into the original inequality to find where the solution(s) lie. |

3. $|x^2 - 2x - 20| > 4$

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| Step 1: Isolate the absolute value if needed |
| Step 2: Set up the Positive and Negative versions |
| Step 3: Solve each quadratic version and graph on a number line. Determine the which case is needed…<br><br>1. $>$ or $\geq$ , use unions, $\cup$, to connect intervals<br>2. $<$ or $\leq$ , the solution interval is where they overlap |

4. $\dfrac{2x - 1}{x + 1} < 0$

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| Step 1: Manipulate the inequality to get one fraction on one side of the inequality, if needed. |
| Step 2: Find the solutions of numerator and the denominator. |
| Step 3: Graph each solution on a separate number line and create a sign diagram. |
| Step 4: Use the sign diagrams to determine when the inequality is true |

Section 2: Solve the following. Write your solution in interval notation.

5. $2x^2 > -7x - 3$

6. $-\frac{17}{8} > \frac{1}{2} - \frac{3x}{2}$

7. $\frac{x+1}{x-5} \leq 0$

8. $|2x - 3| > 17$

9. $|5n - 4| + 18 < 8$

10. $|2x + 5| \geq x + 4$

11. $|y - 4| - 3y \leq 6$

12. $7 + |x + 2| < 18$

13. $\frac{x}{x-4} - \frac{3}{x-4} \leq 2$