Solving Quadratic Inequalities

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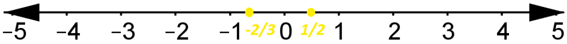

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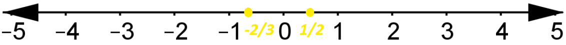

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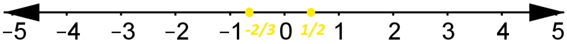

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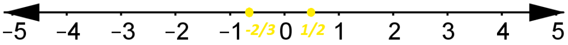

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Still, on each of the three regions (individually) we have either:

1. $6x^2 + x - 2 > 0$ for *every* value on the region (no solutions)

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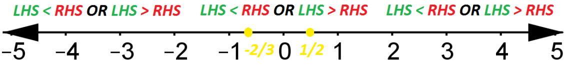

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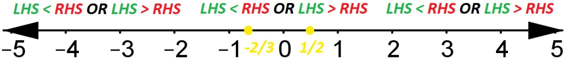

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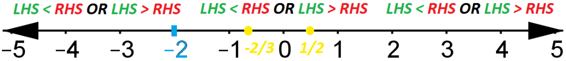

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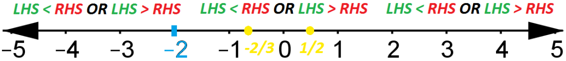

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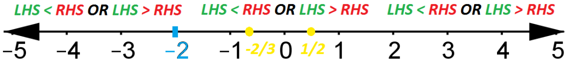

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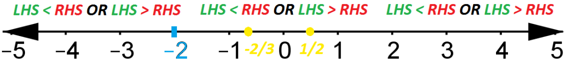

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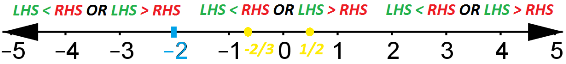

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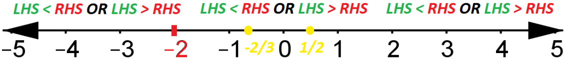

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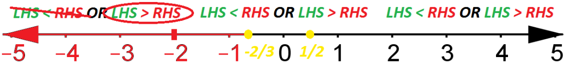

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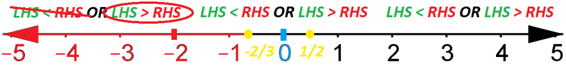

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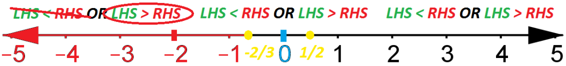

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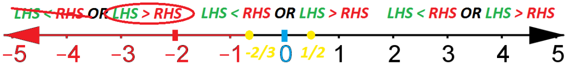

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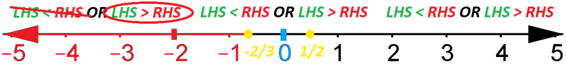

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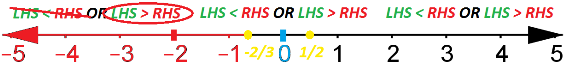

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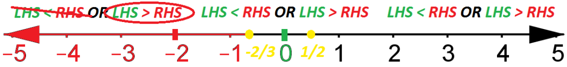

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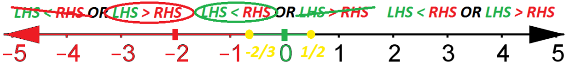

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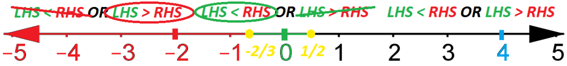

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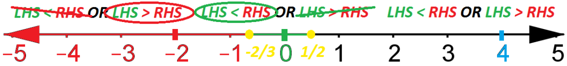

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From the region $x > \frac{1}{2}$, we can pick the number $x = 2$

For $x = 4$; $LHS = 6 \cdot 4^2 + 4 - 2$

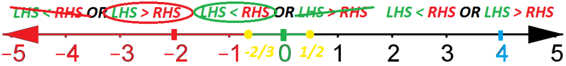
Solving Quadratic Inequalities

Example 1: Find the solution(s) to:

$$6x^2 + x - 2 \leq 0$$

We find that $x = \frac{1}{2}, \frac{-2}{3}$ are the solutions to $6x^2 + x - 2 = 0$

On the number line, we mark that $LHS = RHS$ at $x = \frac{1}{2}, \frac{-2}{3}$



We need to check each regions to see which are solutions.

From the region $x < -\frac{2}{3}$, we can pick the number $x = -2$

For $x = -2$; $LHS = 6 \cdot (-2)^2 + (-2) - 2 = 24 - 2 - 2 = 20 > 0$

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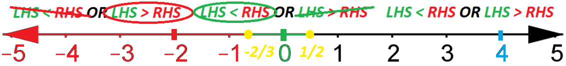

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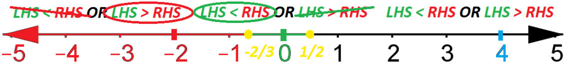

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Solving Quadratic Inequalities

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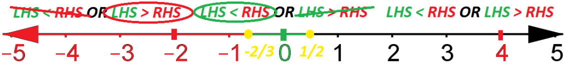

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Solving Quadratic Inequalities

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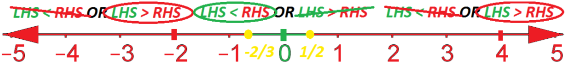

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From the region $x > \frac{1}{2}$, we can pick the number $x = 2$

For $x = 4$; $LHS = 6 \cdot 4^2 + 4 - 2 = 96 + 4 - 2 = 98 > 0$

$x = 4$ is not a solution. So, there's no solution for $x > \frac{1}{2}$

Solving Quadratic Inequalities

Example 1: Find the solution(s) to:

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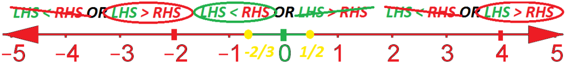

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From the region $x > \frac{1}{2}$, we can pick the number $x = 2$

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$x = 4$ is not a solution. So, there's no solution for $x > \frac{1}{2}$

Conclusion: The solutions to $6x^2 + x - 2 \leq 0$ are: $\left[-\frac{2}{3}, \frac{1}{2}\right]$