

Exercise A.9.103 Consider $|1-2x| > 3$.

Express the solution in set notation, interval notation, and graph.

Solution

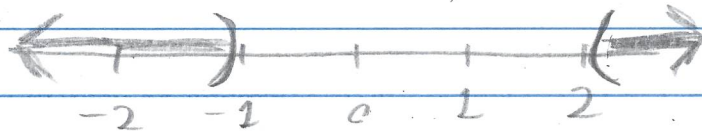
By Theorem A.9.1, $|1-2x| > 3$ is equivalent to either $1-2x < -3$ or $1-2x > 3$. For $1-2x < -3$ we have $1+3 < 2x$ or $4 < 2x$ or $2 < x$.

For $1-2x > 3$ we have $1-3 > 2x$ or $-2 > 2x$ or $-1 > x$. So the solution set

is $\{x \in \mathbb{R} \mid \text{either } x < -1 \text{ or } x > 2\}$

or, in interval notation, $(-\infty, -1) \cup (2, \infty)$.

The graph is:



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