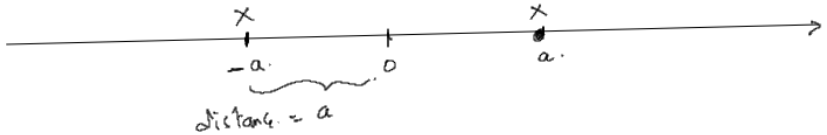
Equation with absolute Value

$|x| = a$, $a \geq 0$ $\Leftrightarrow$ $x = a$ or $x = -a$



- $|x - 6| = -1$ no solution

- $|-5x + 6| = 2$

$\Leftrightarrow -5x + 6 = 2$ or $-5x + 6 = -2$

$\Leftrightarrow -5x + 6 + (-6) = 2 + (-6)$ or $-5x + 6 + (-6) = -2 + (-6)$

$\Leftrightarrow -5x = -4$ or $-5x = -8$

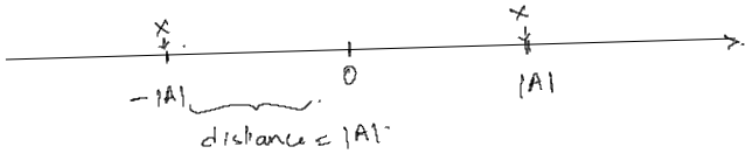
$\Leftrightarrow x = \frac{4}{5}$ or $x = \frac{8}{5}$

- $2|1 - x| + 5 = 7$

$\Leftrightarrow 2|1 - x| = 7 - 5 = 2$

$\Leftrightarrow |1 - x| = \frac{2}{2} = 1 \Leftrightarrow$ $1 - x = 1 \Leftrightarrow x = 0$ or $1 - x = -1 \quad x = 2$

- $|X| = |A| \Leftrightarrow X = A$ or $X = -A$



- $|3x| = |5x - 2|$

$\Leftrightarrow 3x = 5x - 2$ or $3x = -(5x - 2) = -5x + 2$

$\Leftrightarrow 3x - 5x = -2$ or $3x + 5x = 2$

$\Leftrightarrow -2x = -2$ or $8x = 2$

$\Leftrightarrow x = 1$ or $x = \frac{1}{4}$

- $|3x| = 2|x - 1|$

$= |2||x - 1| = |2(x - 1)|$

$|\alpha \cdot \beta| = |\alpha| \cdot |\beta|$

$2 = |2|$

$\Leftrightarrow 3x = 2(x - 1)$ or $3x = -2(x - 1)$

$\Leftrightarrow 3x = 2x - 2$ or $3x = -2x + 2$

$\Leftrightarrow x = -2$ or $5x = 2$

$\Leftrightarrow x = -2$ or $x = 2/5$